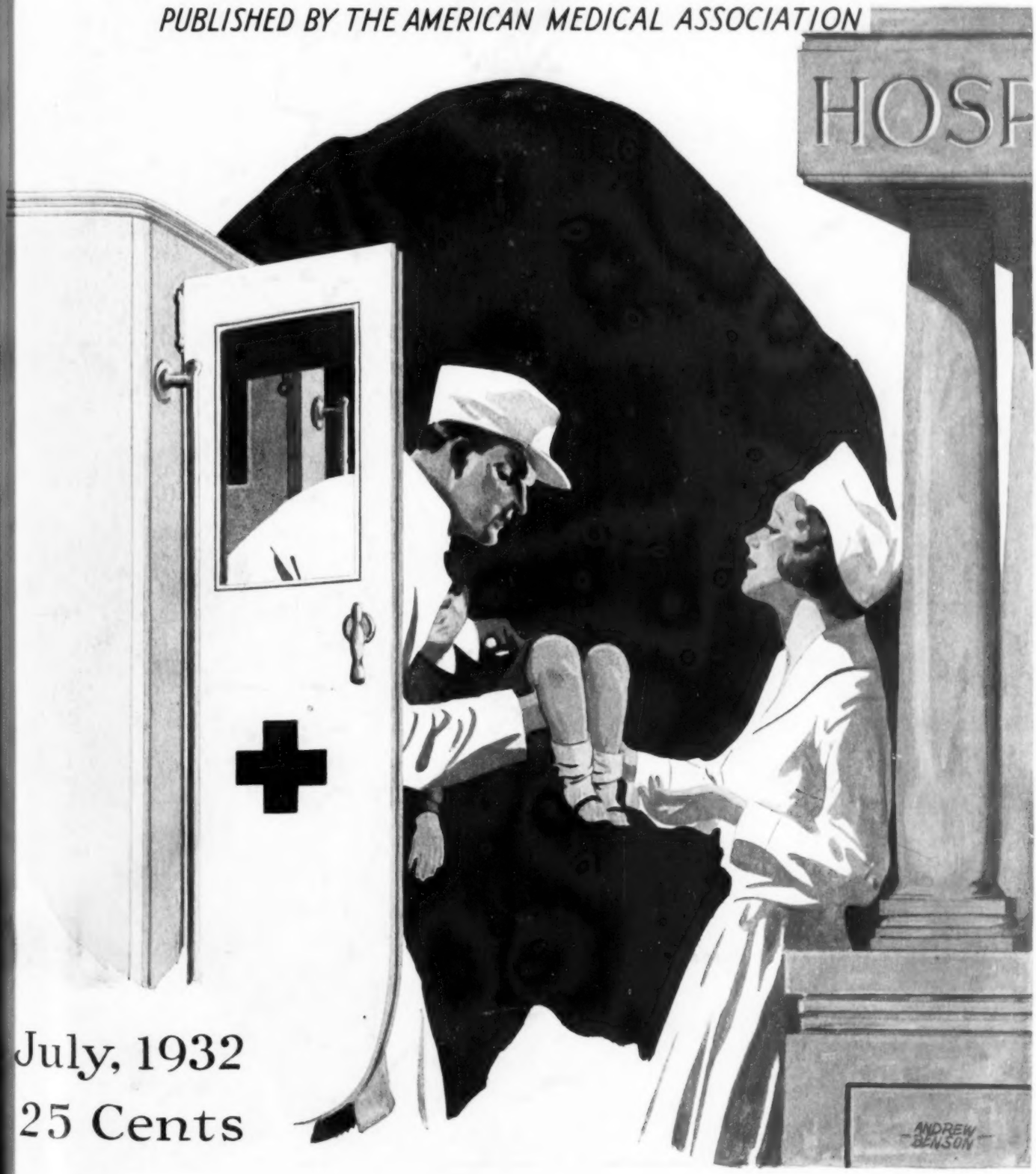
HYGEIA

The HEALTH MAGAZINE

PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION



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Anemia

Food Sensitivity

Par Golf

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The Donnelly Boys — A Family to be Proud of

Francis
Robert
Joseph
Edward

Fed on
Milk and Mellin's

HYGEIA

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DR. C. ULYSSES MOORE, a western pediatrician, discusses the absorbing subject of food sensitivity. . . . DR. HENRY G. LANGWORTHY contributes the second of his group of golf stories. . . . MISS E. M. GERAGHTY, food consultant, describes aids to hot-weather morale.

DR. LEE W. THOMAS gives advice concerning the preschool child. . . . DR. MILTON H. SHUTES advances an interesting theory about the death of Willie Lincoln. . . . CORNA SEARCY HANLIN asks the pertinent question, "Is Your Child a Budding Artist?"

PROF. F. C. KOCH of the University of Chicago contributes an article on the functions of carbohydrates. . . . In "The Mayor and the Milkman," DR. CHARLES H. LERRIGO scores a point for pasteurization. . . . DR. JOHN P. KOEHLER is commissioner of health of Milwaukee. . . . W. W. BAUER is director of the Bureau of Health and Public Instruction of the American Medical Association.

DR. CYRUS C. STURGIS of the University of Michigan, discusses anemia. . . . JOHN M. GIBSON is editor of a sanatorium magazine. . . . ELIZABETH CHABOT FORREST relates some of her experiences as a government teacher in Alaska.

DR. CLAUDE LILLINGSTON recounts incidents from the life of Metchnikoff. . . . DR. O. JASON DIXON is a western otolaryngologist. . . . With words and pictures, BOB BOARDMAN portrays the principles of "Teaching Your Child to Swim." . . . NELLIE G. HERRIMAN continues the adventures of Snickles and Snortles.

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Our Hospitals

An Editorial

TODAY there are 6,613 hospitals in the United States with a total capacity of almost a million beds. The development of the hospital has been one of the most astounding growths witnessed in this country during the last quarter of a century. It represents the manner in which scientific medicine and its correlated professions have attempted to meet the demand of the public for the best type of medical care. Previous to the beginning of the twentieth century, medicine was practiced largely by one man with the amount of equipment that he could carry in a small handbag. Then came all the great modern discoveries in the field of diagnosis and treatment. With these discoveries arose the necessity for laboratories in which blood, sputum and all the secretions and excretions of the body might be studied during health and disease. Shortly after the beginning of the twentieth century the x-ray machine was perfected. Since it is impossible for every physician to own his own x-ray apparatus, it became necessary for x-ray machines to be established at centers convenient to sick people. Such a center was the community hospital. Then, also, physicians began to learn the value of heat, light, air, baths, massage and all the methods of treatment included in what is known as modern physical therapeutics. Finally, more and more, it began to be realized that the services of a competent attendant constantly at the patient's bedside or in touch with his condition might mean the difference between life and death, and often meant added comfort and relief from pain. The response to this demand was the development of training schools for nurses in association with the hospitals.

Today more than three fourths of the 6,613 hospitals in this country are fully equipped with adequate laboratory, x-ray and physical therapeutic service. Less than 300 nurses graduated from training schools in 1890. Some 20,000 graduated from these schools in 1930. Out of all the hospitals in the United States there are less than 500 that have failed to meet the standards of the American Medical Association, for various reasons. The number is small indeed. Their weakness and inefficiency is further revealed by the fact that the entire 500 institutions comprise only some 15,000 beds.

Except for the charity hospitals and those conducted by various city, county, state and national bureaus, the hospitals of this country are suffering today because of lack of occupancy of many beds and because of lack of funds. These institutions have grown up in response to a demand on the part of the community for a safe place in which to be sick and in which to receive scientific medical care. The people built these institutions to meet their needs and, in many instances, have made serious sacrifices to maintain them. Churches, fraternal orders, industries, medical schools and many other educational and philanthropic agencies have cooperated to keep these institutions going. Our hospitals are today largely dependent on endowments and donations as well as on the fees coming from patients. Indeed, it is safe to say that the majority of patients do not pay the hospital the bare cost of their care.

Because of the economic predicament, patients are postponing medical care, particularly surgical care, that would in normal times necessitate the available beds. Hence, in every community those able to spare anything at all in the way of funds should realize their responsibility to the hospital.

It would be a pity, indeed, if any necessary institution were allowed to disappear in this time of emergency. It would be particularly a pity if these institutions should not be used for the patients now being unsuitably cared for in city, county, state and federal hospitals under crowded conditions when they ought to be in the private hospitals properly cared for and paid for by the government funds otherwise delegated to the public institutions. These hospitals mean to the United States the best type of medical care given to human beings anywhere in the world. We must all realize the importance of maintaining them and of making government officials realize their responsibility in the matter.

FEEDING THE SUMMER CAMPER

By

Gladys E. H. Hosmer

MESS CALL at camp! Troops of hungry, sun-tanned lads converge into line formation for the eager march to their places at the long mess hall tables. Three times a day the recurrent problem of satisfying hearty appetites with a properly balanced ration at reasonable cost presents itself.

Whether the camp is run for profit or on a noncommercial basis, the parent who entrusts his child to the camp's care has the right to expect of those in charge that the food served, however simple, will be of good quality, adequate in amount and so planned that it conforms with the generally accepted dietary standards.

These standards include, for each child every day, a quart of milk; two vegetables in addition to potatoes; two fruits (one fruit or vegetable raw); a whole grain cereal in the form of bread or of breakfast food, and a protein food such as meat, fish, egg, cheese or dried peas or beans. Leafy vegetables, such as greens, lettuce and cabbage, should be served at least twice a week, and oranges and tomatoes (the latter may be canned) at least as often.

Dr. H. C. Sherman of Columbia University recommends the following apportionment of each dollar spent for food:

One fifth, more or less, for vegetables and fruit.

One fifth, or more, for milk and cheese.

One fifth, or less, for meats, fish and eggs.

One fifth, or more, for breads and cereals.

One fifth, or less, for fats, sugars and other groceries and food adjuncts.

Ewing Galloway

No need for a second call when "soup's on."

The first three fifths represent the foods required to build firm muscles and strong teeth and bones in young bodies. The fuel foods, which repair waste and furnish the energy for the sports, games, swims and "hikes" that make up the daily program, include the cereals and cereal products, the sweets and the fats. A third important group is formed by the regulatory foods, represented by the fruits and vegetables, rich in roughage and in mineral content. Included in this group should be a plentiful supply of water—from 4 to 8 glasses a day at least. Water constitutes about three fourths of the weight of the human body, and the loss of water, especially when strenuous athletic exercise is indulged in during hot weather, must be made up to the system. A liberal intake of water is therefore essential for good health.

The foods rich in sugar are fruits, especially the dried fruits, honey, molasses, syrups, candy, jellies, jams and concentrated desserts. Foods rich in vitamin content, necessary for growth and resistance to disease and infection and for the regulation of bodily processes, are milk, butter, eggs, whole cereals, oranges, tomatoes (raw and cooked), vegetables (particularly the raw and leafy ones) and fruits.

The chief dietary fault to be observed at many camps lies in the comparative lack of fresh fruit and vegetables and in the overabundance of starches. There is also liable to be a tendency to overdo the serving of sweets in the form of jams and fruit butters; used on

bread as substitutes for butter, these products satisfy the appetite before a sufficient quantity of other necessary foods has been taken.

The faults mentioned are due quite as much to lack of foresight and imagination in planning as to considerations of convenience and expense. Most camps are so located that marketing is difficult and must be done at long range; the natural tendency is to lay in a stock of all possible nonperishable supplies at the beginning of the season. In certain camps that I have visited, I have experienced the uncomfortable sensation that if the can opener were lost, the campers would starve to death in short order! Not that I have any unjustified prejudice against the undeniably useful and invaluable can opener; on the contrary, the nutritive value of canned fruits and vegetables is unquestionable, and the facility that their use affords in the preparation of meals when service is limited and fuel at a premium is an important point in their favor.

Fortunate indeed is the camp situated within reach of dependable supplies of clean milk of a good grade, preferably pasteurized; of fresh fish and properly refrigerated meats at wholesale prices; of ice cream for Sundays and gala occasions, and of a bakery where dark breads as well as white may be secured.

A noncommercial camp with which I am familiar operates on a restricted budget and it is unusually difficult to obtain fresh foods, even a head of lettuce, at any price. Train and transportation facilities are inconvenient and uncertain; there is no wholesale market within 20 miles; the nearest town is a mill village, dependent on a chain store for its own supplies. The director hit on cabbage as a solution of his difficulty, and the boys devour it at least twice a week, with evident relish, when it is served as coleslaw mixed with a savory cream dressing or when it is shredded and combined with pineapple, grated raw carrots and minced left-over vegetables as a salad. Canned tomatoes, rich in the essential vitamin C, frequently appear on the menu in a variety of forms, and at breakfast canned grapefruit is often served. The latter form of fruit has certain advantages over the fresh variety, for there is no refuse (garbage disposal is always a camp problem) and it takes relatively little time to prepare for serving. Occasionally, as a special treat, green corn is procured at wholesale, and a corn roast is in order. Blackberries and blueberries grow in profusion in the near neighborhood, and the camp regularly goes berry picking.

I have heard more than one camp director, with his weather eye on his budget, provide an alibi for the purchase of a lesser allotment than the desirable daily quart of milk for each camper by saying that he cannot get his boys to drink so much. He deceives himself at no benefit to his budget, for milk, at almost any price,

Ewing Galloway

Marshmallows—some like them hot; some like them cold; some prefer them lightly toasted, while others take theirs blackly roasted.

is the cheapest body-building food that can be bought. Served in creamed dishes, soups and chowders, in cocoa, on cereals and in desserts, unlimited quantities are consumed even by those children who refuse to drink it plain.

One of the perennially interesting features of any camp is the way in which food fussiness tends to disappear. The absence of oversolicitous parents, the force of the example of others eating with relish, and the healthy appetites generated by wholesome, outdoor living work wonders at times. I have seen visiting parents fairly aghast at the way their sons tackled the food. "Why, he would never eat that at home!" they exclaim. "And he has eaten twice as much dinner as I ever saw him eat!"

A recent study of food service and waste in a Chicago children's hospital revealed a lack of home training in eating habits. The waste of cream soup was 8 per cent, of protein dishes, 42 per cent, and of cereals, 46 per cent. The waste of fruit, cocoa, milk and butter was under 20 per cent for each, fruit being the lowest. The waste of bread amounted to 29 per cent, but the greatest problem of all, from the point of view of nutrition, was the vegetable waste, which amounted to 49 per cent. Education in the home is apparently what is needed, for the excellent results obtained by the pupil nurses in training the youngsters to eat vegetables, cereals and cream soups show what can be done along educative lines. Federal statistics show that a large proportion of children in this country are undernourished, and those children are not necessarily from homes with low incomes.

Wise planning and careful buying with adequate space for storage and refrigeration and with protection from dust, flies and other insect pests, constitute one step. The next is the proper preparation of food. The saving that is accomplished by the hiring of a really good

cook more than offsets the comparatively small difference in the wages that one is obliged to pay, for wasted material or badly prepared food left uneaten on the plates is the poorest kind of economy. Furthermore, the elements of palatability and variety play no small part in the problem of nutrition. If inaccessibility of markets, limitations of storage space and considerations of economy make it expedient to buy a whole side of beef at one time and to eat nothing but beef until that is gone, it is highly desirable that the cook should be skilled enough to vary the forms in which the meat appears. If the majority of the boys remain in camp during the entire season, it is also well to avoid falling into the lazy rut of serving routine menus on regular days.

"Gee, I don't want to go to the mess hall tonight! I know just what we are going to have for supper!" says a boy who would in all likelihood eat exactly the same dishes with gusto if they appeared before him unexpectedly.

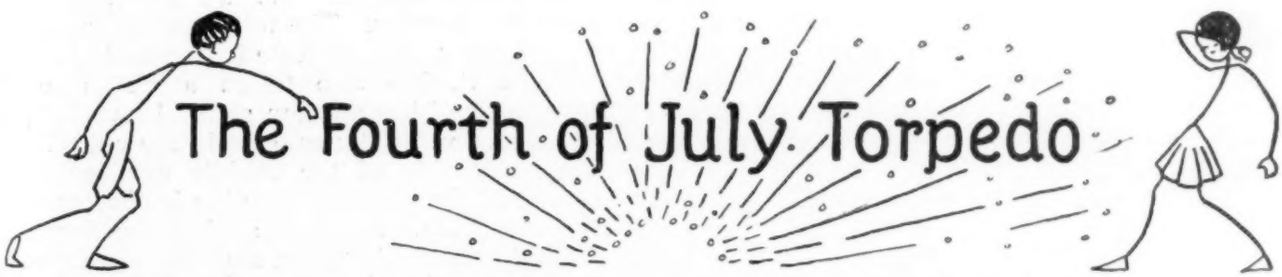
The manner in which food is served counts for nearly as much as its choice and preparation. No matter how simple the equipment, cleanliness and order can be maintained by insistent supervision. Tables must be spotless, whether the tops are merely well scrubbed boards or whether they are covered with oilcloth or the more durable linoleum. Badly nicked dishes and enamel ware, rusty knives and forks, and inadequate facilities for dish washing are poor economy. Hot food should come to the tables hot and cold foods adequately chilled, on attractively arranged platters and serving dishes.

Food for hikes and picnics should be carefully chosen, easily digestible, and nourishing. "Hot dogs" and lemonade may appeal to the youthful palate but are usually productive of sleepless nights and visits to the "doc's" shack the next day.

An adequate lunch for a day's trip consists of peanut butter sandwiches, cookies and an orange, a banana or a handful of raisins. Hard cooked eggs, sandwiches of many kinds, crackers, cookies, figs, dates, raisins, sweet chocolate and fruit are all desirable items for the lunch box. An ample supply of safe water should be assured on all occasions when campers are out of bounds.

The matters of allowing sweets to be purchased for consumption between meals and of receiving boxes of goodies from home call for intelligent parental cooperation. Some camps maintain their own candy stores and strictly limit the hours for purchasing and the amounts of expenditures. The boxes from indulgent relatives are usually required to be shared by the recipient with his tent mates or table mates. One thoughtful parent is in the habit of sending an occasional 5-pound tin of marshmallows for the entire camp to toast at the weekly campfire. If gifts and purchases could be restricted to fresh fruit only, there would be far less recourse to the detested castor oil bottle.

From a purely business standpoint, if for no better reason, the wise camp director gives an ample share of his attention to the feeding of his campers; nothing gives a camp such a good name as a reputation for good "eats."



EYE INJURIES resulting from Fourth of July torpedoes occur frequently, but a timely warning may prevent accidents of this kind. The very make-up of the torpedo suggests trouble. These noise makers consist of a small bit of concussion explosive, usually a percussion cap, surrounded by a mass of tiny pebbles, the whole being wrapped in a wad of paper. When this is hurled against any hard surface, a loud explosion results and the contained gravel is scattered in all directions.

Among eight cases reported to an eastern hospital in 1930 and 1931, the eye injuries consisted of lacerations of the cornea and conjunctiva, burns and penetrating wounds, or a combination of these. The downward direction of the pellet causes the gravel, on hitting the ground, to fly up; hence the upper portions of the eye are usually affected.

Statistics show that it is usually the bystander who is liable to get hurt, because the hurler usually throws away from himself.

In none of these cases was the accident attributable to carelessness or to the use of the torpedoes in a manner other than that for which they were intended. The obvious hazard which attends the use of such torpedoes, particularly the danger to the innocent bystander, demands that their sale be prevented, an article in a recent issue of *The Journal of the American Medical Association* suggests, bringing a timely note of warning.

Ear Disorders in Childhood

By O. Jason Dixon

DURING infancy and early childhood a common ailment is earache. The complications arising from this complaint are as variable as their frequency, and the severity and duration of the pain is in direct proportion to the complications. Due to the fact that early acute infections within the ear do not cause any deformity and do not produce visible external changes, they are frequently neglected.

In many instances, even when the mother is aware of the source of the disturbance she is falsely consoled by her older and well meaning neighbor who tells her that her child has only a "rising" in his head and as soon as it breaks he will be all right. Little does she realize how intensely her child is suffering or what unnecessary risks she is taking.

Now why should a parent permit a child to suffer pain needlessly and by doing so invite disaster in the form of unmanageable complications? I believe that this attitude results from a lack of knowledge as to the nature and location of the infection. Any mother whose child is subject to ear disturbances, in the form either of earache or of a discharging ear, knows that this condition usually follows acute head colds, particularly when a cough is present. There is a good reason for this. The middle ear, which is that part just within the drum, is the locality in which ear infection first starts. This little compartment is connected with the throat and the back part of the nose by a small collapsed tube, called the eustachian tube, whose function is that of a ventilator and drain. This tube is momentarily opened when the child coughs, swallows or sneezes, and sometimes when the nose is blown violently. With the throat and back of the nose filled with discharge, it is not surprising that some of this germ-laden material should find its way into the middle ear and set up a violent disturbance.

At first the child complains of a full sensation in his head and may be noticeably deaf. This is soon followed by sharp, intense pain, and he usually says that his head hurts. Small children do not localize pain well, even when they are old enough to talk. Fever, which comes and leaves suddenly, is usually present. The child refuses to eat and may vomit. This symptom is misleading. He is uncomfortable in any position and is quite irritable. Infants are thought to be teething. For some unexplained reason the earache is actually worse at night. This also leads to postponement in proper treatment. The tired mother, who has firmly resolved to call for help in the morning, is easily deceived when her fretful and restless child goes to sleep during the day. He does seem better, and she thinks he is better.

In spite of the faithful instillation of various "ear drops," this condition may persist for a week, when suddenly there is a profuse discharge from the ear, and the child falls into a long restful sleep.

What has happened during the storm? Pus has been forming in the middle ear cavity within the large temporal bone at the side of the head which holds the delicate receiving apparatus for hearing. The tube, which was guilty of allowing this infected material to pass through it, has also fallen a victim to the invasion and has swollen shut. Its useful purposes as a ventilator and drain are cut off. On the outer side of the middle ear cavity the escape of the pent-up secretion is obstructed by the ear drum. Pressure against the drum has caused excruciating pain, and this, together with the destructive infection, has finally broken through, and the ear starts to drain.

The ear drum, I find, is a poorly understood structure. It is given a far greater responsibility than it deserves. Many a mother has thrown up her hands in despair when told that her child's ear drum has been lanced. She thinks that the entire hearing apparatus has been destroyed. The drum really plays a small part in hearing. Let me explain briefly its structure and function.

The ear canal is a round hollow tube which is formed of cartilage, as in the external ear. Its only purpose is to conduct sound waves into the hearing apparatus, which is located inside the temporal bone. This apparatus is so delicate and finely adjusted that nature wisely

wished to protect it from dust, water and other foreign material. This covering had to be not only thick enough to be protective but thin enough to allow the slightest sound to penetrate. For this purpose, she stretched a thin, dense, extremely sensitive, white curtain over the perfectly adjusted little ear bones and completely closed this delicate mechanism to the outside air.

This membrane is called the ear drum and is attached to the entire edge of the ear canal. On the inner side, it is so finely fastened to the small ear bones that the least vibration will cause a sound wave to pass through them into the brain. Not only does it help to pick out the delicate sound waves and to intensify them, but it modifies the extremely loud noises. As can be readily understood, the ear drum has a useful purpose, but when an abscess forms within the middle ear that cannot escape through the tube into the throat, it becomes necessary to drain this cavity by incising the ear drum. When this is done properly it causes no damage, and the chief difficulty is to keep the incision from healing too soon. After the discharge is drained out and the inflammation has subsided, the slitlike hole in the drum quickly heals and returns to its former useful purpose.

What happens when this pus is not drained out? It keeps forming, and, as it must go somewhere, like water that is dammed back in a river it finds exit elsewhere as it rises and overflows into the honeycombed compartments back of the ear, known as the mastoid cells. This procedure produces a mastoiditis. Then, after it is too late, the ear drum may break of its own accord, and, although the drainage is profuse and gives relief, it is often impossible for the mastoid cells to recover, and an operation may be necessary to clear up this infection.

While there is apparently much concern over mastoiditis and the operation for this complication, its danger really is greatly overrated. Mastoiditis is not a serious disease, but because of its close proximity to the brain and its large vessels, the complications arising from it are serious and quite difficult to manage.

By far the greater majority of infected ears pursue a milder course than that which has just been outlined. But these facts should be borne in mind: A persistently painful ear may be a dangerous ear. Once an ear is infected—it matters not how mild the disturbance—it is more liable to have a recurrence of trouble. Repeated exacerbations of "risings" in the head cause destruction of the delicate hearing mechanism and eventually produce a deafness that does not offer any response to treatment. Early incision of the ear drum gives relief and, when properly done, is a harmless procedure.

Oral Hygiene and the Habits of Infancy

"SOME of the apparently harmless habits acquired by young children have a serious effect upon the teeth and mouth, and eventually upon the general health. The sooner they are faced, frankly and squarely, and corrected, the better it will be for the child's health," Dr. Richard C. Leonard of the Maryland state department of health explains.

Thumb sucking and finger sucking, lip sucking and cheek sucking, pacifiers and harmful sleeping positions all tend toward the same results—a misshaped mouth arch, jaw deformities and crooked teeth.

These habits are not at all "cute," since they harm the growing infant physically. As for habit formation, Dr. Leonard adds:

"It is comparatively easy to break a habit before it has had a chance to become fixed. There is usually a cause underlying it and it is worth while to find the cause and correct that, if possible. In some instances, thumb sucking may be due to unsatisfied hunger; in others, to overfeeding. Get your doctor to help you find out which it is and act accordingly."

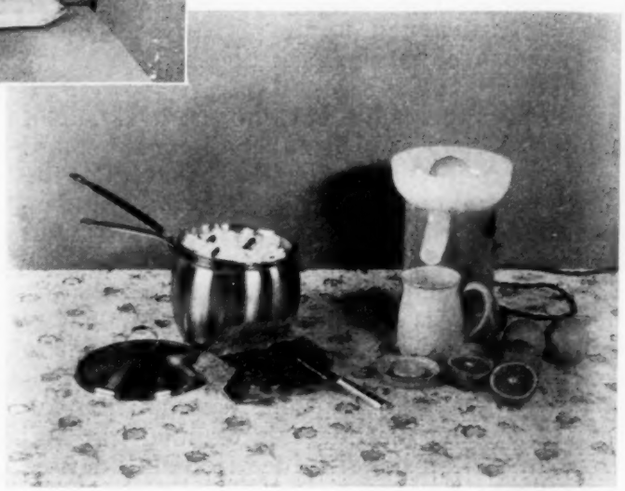
Special attention should be devoted to the greatest of all trouble makers—the pacifier. This object the careless mother pushes into the baby's mouth to keep it shut. Pacifiers have been responsible for changing the shape of many a mouth arch. They probably have had a great deal to do, also, with the development of adenoids and, in turn, with the production of many a "mouth breather." The baby is not responsible in any way for the pacifier habit. Mother is the one who begins it. The pacifier habit is a filthy one that carries germs along with its other dangers.

One may purchase any of a number of mechanical devices to break the habits of thumb sucking and finger sucking. Sometimes it is necessary to resort to devices constructed by the dentist to fit particular cases. The earlier the dentist is consulted, the easier it will be to have the necessary corrections made.

These Preparation

By DORIS

There is pleasure and comfort in cooking when one uses the articles displayed above: a large top-stove oven, a double boiler of blue enameled ware, a sharp chopper for mincing beefsteak, an electric tea kettle, fancy sandwich cutters and a grater and slicer that may be clamped to the table.



Preparing breakfast for a hungry family is "no trick at all" when one uses stainless metal containers and knives and an electric fruit juice extractor.

NINE TIMES out of eleven, the child is absolutely right when he refuses to eat the cereal offered to him—it is sticky and lumpy. The spinach is frequently gritty and slightly bitter; the gelatin, a bit too soft; the jelly for his bread, too sweet and smeary, gummy or syrupy, and the broth is tasteless and certainly not the sort of food that a first-class hotel would serve, though I admit having tasted such broth at a hospital!

But what is the poor mother to do, with so many duties, chores, obligations and responsibilities already? There are simply not enough hours in the day for fussing with flavor and fixing fancy dishes. Perhaps the problem can best be solved by adding to the kitchen equipment certain items that will cut into half or less the time as well as the labor required for performing various tasks such as sieving vegetables and extracting orange juice.

The Top-Stove Oven

Baby's baked potato is such a bother. It requires considerable gas, and the oven heats up the kitchen, but those annoyances may be overcome if one uses a smaller, one burner, top-stove oven, in which one potato or enough potatoes for ten persons may be baked. The gas consumption is less than half of that required when the range oven is used. The oven with potatoes which is shown in the accompanying illustration is the larger size, with heat indicator. For baking, the required temperature is 275, for roasting, 300, and for grilling, 400 F. To brown the food, the valve is opened to allow the escape of steam during the last third of the time. This is accomplished by turning the knob (which is also used for lifting the lid) to open the holes at the top. A "no-burn" plate of heavy sheet steel with ridges and hood-shaped apertures forms the bottom of the oven; it fits directly over the burner, becomes red hot and distributes the heat through the oven. There is a heavy aluminum ring which fits this plate and there is also a removable rack, large enough for baking a 10-inch pie or layer cake. This size will roast an 8-pound cut of beef, two small chickens or a leg of lamb which has been trimmed at the first joint. The small wire rack is used for roasting.

Baby's potato takes about the same length of time to bake in the top-stove oven as in the regular large oven; that is, from twenty-five to thirty-five minutes. Extra large potatoes require an hour, and how delicious they are!

Light, delicately brown angel food cake may be baked in the smaller oven, and one may prepare delicious sponge cup cakes for the children's lunch. This oven is equipped with the gem pan, allowing space for baking seven muffins, and a deep pan into which fits a shallow one when custard or pudding is steamed. The pans may also be used for baking cake, beans, pudding and apples, or for warming over food.

Make Meal Easier

W. McCRAY

The utensils pictured above might almost be termed magic devices, for the corn popper may be transformed into a casserole; the combination saucepan enables the busy housewife to prepare two dishes at one time in one utensil; clover leaves may be sliced from the icebox cooky mold; the fruit sieve serves a dozen purposes, and the lightning shredder and grater cuts time and labor in half.

What child would not be tempted by cooked cereal served in such an attractive setting? One-half cup of raisins was added to each cup of cooked cereal.

The no-burn plate and the wire rack make an ideal place for toasting bread or, with cover in place, for heating rolls. It is easy to see what a versatile piece of equipment this little oven is; it bakes over a single gas, electric, kerosene or gas pressure burner, or on a coal and wood range, taking up the space of a single large kettle.

Juice Extractors Turn Work into Play

A few moments' gentle whirring of the electric motor, and every drop of juice is out of the oranges, and also every bit of good tasty pulp. This is economy, for never have I seen an ordinary lemon squeezer do half so neat a job. It is such fun to press the halved oranges down on the whirring aluminum shredder bulb. Small son is fascinated as he watches daddy fix orange juice. I'm sure we are all drinking more orange juice since we obtained this magic electrical device that makes a one-time chore seem like play. And I am glad, for this is a most dependable source of vitamin C. Our family has found that the juice of one lemon to ten or eleven oranges seems to improve the flavor. We are divided as to the necessity of using sugar in the orange juice but united in liking the juice fresh, just as it pours from the glass bowl of the extractor, undiluted and cold, as the oranges have been chilled in the refrigerator.

The Reminder Clock

The reminder clock is not shown in the illustration, but I have found it exceedingly helpful. A single turn of the knob sets the dial. If one's hands are a bit floury from cooky rolling, it does not matter. One's left hand will set the clock for any time, from one minute to ninety. When the bell rings, it is quickly stopped by pushing the lever on the clock's face to "off." The reason the clock is so much easier to use than an ordinary alarm clock is that it can be set without being taken down from its hook on the wall, and it is an accurate reminder for either a long or a short period of time. It may be depended on to notify one that it is time for baby to be fed or wakened, or that the bottles have been sterilized long enough, or that the custard is baked.

A Time and Labor Saving Sieve

To me, it seems remarkable that one device can sieve so many different kinds of fruits and vegetables as successfully and rapidly as can the fruit and vegetable sieve. It quickly separates the woody from the tender portion of asparagus or celery, ready for baby's cream soup. Tomatoes, apple sauce and prunes are sieved for the little children's meals or for soups, soufflés and puddings for the family.

While the ordinary sieve is rather a nuisance to use and to wash afterward, this one is sturdily

built of heavy gage, hard, cold rolled drawing steel and will last a lifetime. The parts are quickly assembled for use and clamped to the table, allowing space beneath for a large deep bowl. The perforated bowl slips into the portable stand of strong steel rod. The spiral pressure blade is fastened with a knurled thumb nut with a heavy tempered steel spring attached, which regulates the pressure. The outside of the bowl is kept clean by the use of a metal finger or scraper which may be attached when needed.

The spiral pressure blade is beveled and does not cut or grind the food being sieved but presses it; a thin film thus formed between the blade and the bowl prevents wear on the working parts. The blade is sturdy enough for grinding toasted scraps of bread into crumbs and is often used for grating cheese.

Apples are cut into halves and only the spoiled portions are removed. The halves are then steamed till tender and are put through this press. The hard dry cores, the seeds, and the skins absolutely free from pulp, which form the residue, represent about one-fourth the amount of waste which would have resulted had the apples been peeled and cored before being put into the press. I have demonstrated this several times myself with windfalls that were not worth spending time on for peeling; yet the yield of apple sauce was ample and full flavored.

Cranberry jelly is easily made by removing the indigestible skins. Baby may eat corn soup, if the corn is cooked until soft and then put through this vegetable press to remove the hulls. Lentils and peas make good soup. If the porridge should become lumpy, it can be run through to smooth out the lumps or to sieve them out.

The Combination Saucepan

A deep saucepan is planned to utilize the extra heat that ordinarily escapes from the top of the pan. A small inset pan slips into place, for cooking one extra food, all over the same burner and under the same pot lid, thus affording economy of space and of fuel.

The idea is a bit different, although it has been used in the waterless cooker. Now it is adapted to the saucepan, making it ideal for a small amount of food for the young members of the family. The food in the upper pan will be steamed—an ideal method for asparagus, spinach or young carrots. There are four filter wells, preventing collection of undue moisture. An inset rim with closed bead construction insures perfect sanitation. Two slits are there, so that one can slip a couple of ordinary table forks into them, to lift out this little pan. One might poach eggs in the upper pan, tightly covered, or cook a creamy custard, with occasional stirring, while the soup is boiling below.

The inset pan may be left out entirely when it is not needed. Being made of heavy gage, pure aluminum with rounded corners, the pan is ideal for cooking a sauce or a lemon pie filling which needs stirring to prevent sticking or scorching. The cover should be left in place while the filling cools. The lid fits tightly and prevents formation of a scum on the mixture as it cools. Then the lemon juice and a bit of vanilla are added. Part of the mixture is poured into little glass cups that are topped with meringue and browned for the young members of the family whose menu does not yet include pie crust.

On the lid is a "nonburn" knob; there is also an automatic steam release valve, so that if the water boils too hard, the steam comes out of the kettle instead of lifting up the edge of the lid.

Being made of this sturdy stuff, the saucepan is suitable for cooking with a minimum amount of water; or, if one is sure the fire is low but still will not blow out, cooking may be done entirely without water, the water clinging to the spinach leaves and washed turnips being depended on to furnish steam until the vegetables are cooked sufficiently to let a little moisture of their own escape.

The Electric Tea Kettle—At Your Service

When just a little hot water is wanted, the electric tea kettle heats just that much in any room in the house, without the need of fussing with fire and matches. This is an ideal addition to the nursery, where the hot water bag is to be filled to press against an aching ear, when it is way past midnight and relief is urgent.

And by the way, a steel wool pad clipped neatly to a rubber pad holder and rubbed over its special soap is ideal for cleaning aluminum. It does not matter if the aluminum darkens or if cooking tomatoes in it brightens it up a bit, for these conditions may result from a complex chemical or physical interchange involving for one ingredient iron compounds. The iron compounds may be derived either from the food being prepared or from water. There is no merit in the belief that such coloration affects the wholesomeness of the physical food in any manner. Experimental work has shown that aluminum ware may be confidently chosen for cooking baby's food.

The grater and slicer clamped to the table grates almost anything—carrots, bread, potatoes, onions, crackers, cheese, chocolate or apples. The carrots thus grated are not extremely fine; hence the children like them for salads and for sandwiches of graham bread cut into stars or crescents for their school lunch. There is one cylinder for grating and another for slicing. The knobbed glass block for pushing the food against the revolving grater is easily cleaned and cannot affect the food.

Enameled ware utensils are real conveniences. The large bowl under the fruit sieve has a rolled rim and is easily gripped. The deep narrow bottom makes it convenient for mixing small as well as large amounts and for using an egg beater as well as a wooden spoon.

A pint pitcher, catching fruit juice as it is extracted, is provided with a cover that effectively protects the spout, thus keeping milk free from dust. It may also be used in the refrigerator and is available in larger sizes.

A double boiler in a convenient size for the nursery may be procured in a lovely blue color. One likes to think of enameled ware as being like china, only that it is possible to cook in it. There is beauty in a smooth, hard, china-like surface for cooking. It is absolutely neutral from a chemical standpoint, just as glass vessels used for receptacles in a laboratory must be chemically neutral. With the strength and lightness of steel, enameled ware combines the sanitary, acid-proof, glossy, easily cleaned surface of glass, for it is really glass-baked steel fired at a high temperature.

Several other interesting items are shown in the illustrations. A hard rubber composition device is slipped under one side of the fruit sieve to protect the table from marks and to keep the sieve from slipping.

There is a bright shiny knife with stainless steel blade resting against the package of dates that are being sliced and put into the rice. The handle of the knife is aluminum-covered and is filled with compressed cork to protect it from the heat and from denting, and to make it sanitary and easily cleaned. The rice boiler is of the new stainless metal. The lovely colored oilcloth is a most attractive pattern for covering the nursery dining table which, between meals, serves as a play table.

Hanging on a nail beside the electric tea kettle is a device for chopping, cutting or pounding meat. Thus pounded, meat yields the fresh good juice for baby. When he is older he will take his beef, carefully broiled, after the fibers have been broken down with prongs that sink right into the meat, making it tender and easy to chew.

The icebox cooky molds are used for making clover leaves out of plain dough. After thorough chilling, the cookies are sliced off, to save the work of rolling and cutting.

The corn popper has an agitator that is operated by turning the red knob. The ventilated lid allows the escape of steam and lets one shake out the "old maids" by turning the pan upside down while the lid is still in place. But when this lid is removed, the pan becomes an ordinary saucepan. And when the long rod that holds the handle is unscrewed, the popper becomes a casserole for oven use. Surely such a corn popper justifies its existence in any home. Fun and pleasure have their distinct place in the psychology of child nutrition!

Physical Analysis of the Adolescent Child

"'ALGEBRAIC symbols,' says a schoolboy's essay, 'are used when you don't know what you are talking about.' And surely adolescence is that period of life concerning which, figuratively speaking, one might most readily be excused for employing algebraic symbols," T. Wingate Todd writes in the *American Journal of Diseases of Children.*

Adolescence is merely the inception of adulthood. In discussing the physical aspects of the adolescent problem, the author adds: "The reproductive function presupposes an organism substantially fully developed. Consequently, although the general broad lines of sexual development were established very early in the process, the reproductive organs lie fallow for a long period during which growth of body and adaptation of response are developed before nature returns to the completion of her task."

The length of time required by man to reach maturity is much greater than that of other primates. The anthropoid needs only two years; man takes from the sixth to the twentieth year to complete this development.

"A long adolescent period maintains a plastic state for accumulation and registration of experience before the human organism crystallizes into maturity.

"The human brain is substantially adult in pattern at 6 years. Thereafter mental development is dominated by finer discriminations of judgment trained by experience. Hence adolescence is characterized by mental, rather than by physical, complexities. . . .

"The supposed individual variations in date of inception and in sequence of expression of the phenomena of adolescence are to be attributed to the interplay of factors, mainly internal and endocrine in origin, the combination and precise significance of which are still to be defined. . . .

"This physical expression is not an academic finding but an exceedingly important quantitative indicator of constitutional health or defect and may be applied with confidence in the assessment of developmental growth," the writer concludes after a thorough discussion of the various phases of adolescence.

Medical Attention and Dentistry

As Practiced in Other Lands

A Globe Photo

QUITE MODERN

The Fiji witch doctor, believing in being progressive, has rigged up a contrivance resembling a reflector, which he wears on his forehead.

A Globe Photo

The witch doctor's method of treatment—blowing into the ear with the hope of expelling illness—distresses this patient of a South African Zulu tribe.

A Globe Photo

TOOTHACHE

In northwestern Australia, the chief of the tribe is also chief dentist. A sharp stick and a rock are his instruments.

FAITH

An aged Japanese woman is seen stroking the bull as a cure for rheumatism. This sort of faith is deeply rooted in the older generations of the Japanese.

Underwood and Underwood

Allergy — *Wherein It Is Shown that One Man's Meat Is Indeed Frequently Another's Poison*

By C. ULYSSES MOORE

"ACHOO! Achoo!" sneezed Jimmy, whose handkerchief had been briskly plying between his pocket and his nose. "Achoo! Achoo!"

"Jimmy, what *have* you been doing to catch another cold?" demands mother.

"I don't know, mother, except that there was celery in the soup today."

Jimmy's mother, finding it necessary to obtain employment during a financial crisis in the family, had allowed Jimmy to eat his lunch at the school cafeteria. These lunches, carefully planned so as to be simple, nutritious, well balanced and, indeed, ideal for the majority, were sometimes disastrous for Jimmy.

"But," some one asks, "how can celery harm any one, cooked celery at that!"

Listen to Jimmy's story.

Poor little Jimmy's nine years had been an almost unbroken series of nasal and bronchial infections. Hardly did he recover from one attack when a fit of sneezing and sniffling would herald the onset of another. Medical attention, careful hygiene with emphasis on a properly balanced diet, fresh air, exercise and an abundance of sleep seemed of little avail.

At last one day the distracted mother, remembering that her father had been a sufferer from asthma, decided to have Jimmy tested for susceptibility to pollens. After listening to her recital of Jimmy's trouble, the doctor whom she consulted said, "Yes, pollen may be the cause, but the fact that the trouble is not seasonal suggests that it is something else. It may be house dust or animal emanations, the fine particles from hair or feathers, or it may be some food."

"Oh, but doctor, I feed him so carefully and scientifically, I am sure it can't be his diet."

Then the doctor proceeded to explain to Jimmy and his mother how a person may have an idiosyncrasy or hypersensitiveness to a certain food, which converts that food into a veritable poison for that individual.

For Jimmy, celery proved to be the offender. When this was omitted from his diet, his colds were controlled by observing the ordinary rules of hygiene.

As the doctor explained to Jimmy's mother, not merely such indigestible foods as rarebit and lobster à la Newberg may cause trouble, but certain meats, fruits, vegetables or cereals may be equally though less spectacularly detrimental to some persons. Hay fever, bronchial asthma, "colds," eczema, hives, intestinal disturbances and migraine (sick headache) may have their source in some ordinary food, to the protein of which the individual organism reacts unfavorably. In medical parlance this hypersensitiveness is known as allergy.

Allergy may be hereditary or acquired. Frequently several members of a family exhibit a tendency to asthma or migraine though each may respond to a different protein or series of proteins. A hereditary tendency to any of the allergic diseases complicates the problem and usually demands more careful and prolonged treatment than the acquired form.

Nursing infants may exhibit an allergy to the protein of certain foods eaten by the mother, resulting in colic or eczema. Allergy, which manifests itself in infancy as eczema, frequently is the forerunner of hay fever or asthma. Not only should infantile eczema receive external treatment, but it should be carefully studied from the point of view of food sensitization, and those food elements found to be harmful to the child should be omitted from the mother's diet.

Until recently, a physician who suspected food to be the cause of illness in a patient had to resort to the process of elimination to determine

the offending article of diet, a process tedious and often ineffective. Now, however, the science of chemistry has developed the protein skin test for this purpose. The extracted proteins of some 200 common foods are now available to the medical profession for use in allergy testing. Any food may be tested simply by placing a drop of the food extract on a minute scratch on the skin. If within thirty minutes a large red area develops, the individual is abnormally sensitive or allergic to that food and should therefore avoid it entirely. Twenty or thirty foods may be thus tested at one visit without special discomfort to the patient.

By means of these protein skin tests, startling discoveries have been made in many cases. One youth in his teens, who like Jimmy had always been subject to repeated bronchial "colds," was found to be highly sensitive to veal. By eliminating this article from his diet, his colds were reduced to average incidence. A 4-year-old child whose incorrigibility was the despair of his parents became a normal individual when lettuce, of which he was fond yet to which he showed a strong skin reaction, was removed from his diet. A 9-year-old girl, a lifelong sufferer from hay fever and bronchial asthma, whose parents had spent a fortune in their endeavor to find for her a remedial climate or treatment, conquered her trouble on the removal of milk from her food list, and in three months she developed into a robust child. An instance of particular interest is that of a man, old at 50 from repeated attacks of bronchial asthma, unable to work, unable to sleep except in a sitting posture and with hourly injections of epinephrine. Of the whole list of food proteins as well as those of pollens and animal emanations, he reacted only to cottonseed. On the removal of all articles of food containing any oil from this source, and, in addition, the discarding of his cotton lint mattress, his recovery was rapid and spectacular. After two days he could sleep in a horizontal position without drugs. A marked gain in weight and general health followed, so that he was soon able to resume his occupation.

Some persons are burdened with a polysensitivity; that is, allergic manifestations to several proteins. One child, a constant sufferer from colds, with localized swellings of the nose and upper lip, reacted allergically to eggs, spinach, beets, radishes, wheat, rice and oatmeal. These foods had been served him so frequently that he was rarely free from their pernicious effects. After their discontinuance, improvement was immediate. But even now after three years of abstinence, indulgence in any of them, even to the extent of holding a few grains of uncooked rice in his mouth for a few minutes, still results in a fit of sneezing and the onset of a "cold."

With some individuals, a permanent discontinuance of the offending food is necessary, while with others immunity may be established by an abstinence of a few months. Likewise in some cases, desensitization may be accomplished by properly graduated doses of the protein at fault.

Thus from infancy to old age, food proteins may produce certain characteristic disease reactions in persons hypersensitive to those proteins. The cycle often runs thus: in infancy, colic and eczema; in the older child, intestinal disturbances, hay fever or repeated "colds;" in the adult, hives, asthma or migraine. It is now known that in any of these diseases, food allergy must be considered. No longer is the demand made that a child or an adult must eat anything and everything that the other members of the family eat. Truly, one man's meat may be another's poison.

The Par Game

The Miracle That Made a Champion

By

HENRY G. LANGWORTHY

I HAD often observed the young man on the links. He was about 17, thin, tall, gaunt but nevertheless possessed of many of the attributes of a natural golfer.

"Twenty pounds underweight and of atrocious health habits," was my inward comment.

The lad was not only pitifully thin and undernourished but evidently deficient in stamina. I happened to know the family history which suffered a bit from an indefinite, though not particularly bad, constitutional weakness. The father could be classed as devoid of personality, but the mother was one of the finest women I ever knew. The young man had just finished a golf lesson from the club professional, but his lack of serious attention to the business in hand had evidently not put him in a favorable light with that individual.

"What's the matter, Coach?" I asked as the instructor passed. I could see that he looked displeased. Coach Peyton took his profession and pupils seriously. He considered inattention a cardinal sin.

"Everything, with that young fellow," he replied, jerking his thumb in the boy's direction. "He needs a lot more than I'm going to give him."

"Now wait a moment, Coach," I appealed, smiling a little because I knew what was coming. I was also acquainted with the instructor's unusual sense of duty. "Bud Saunders needs your help badly—but in another way than strictly golf. We both agree on that, don't we?"

"We do," he replied without hesitation. "He has the making of a sweet golfer, but nobody can handle him. It's impossible, that's all."

I waited to make sure that the worst was out before I said anything more. "I have a plan, Coach, which I believe just fits his case, but you are the only one who can carry it out." I was thinking of the boy's mother as I spoke.

"All right, go ahead, I'm listening," replied the professional.

"Young Saunders, we know, is thin and undernourished. For that reason he's weak in will power. He doesn't want to practice or have any restraint. In your eyes he won't make the grade unless a miracle happens."

"You said it," the instructor assented. "A miracle, indeed, and my patience is about exhausted!"

"Well, what can you expect in an underweight who lacks vitality? Build him up. With that narrow chest and no muscle, what he needs is not to be allowed to play golf at all. He's so thin already that exercise will simply burn up the small amount of fat he has on his body. Tell his parents that the boy must be ruled with an iron hand. Make him have a general medical examination, take four nourishing meals a day and plenty of milk, and get to bed at 9:30 o'clock every night for a good rest."

"What you want is a sort of wet nurse for him I guess."

"Possibly, but beyond one hour of practice daily, the lad should not play a golf game for at least two or three months. If he carries out my instructions, I'm sure you won't know him by the middle of August."

"That's some order. I doubt whether I or any one else could carry it out."

I could see, however, that the instructor was impressed. The boy really had promise of making a fine player.

"The plan will work if we get his mother in on the proposition. I'm positive of that," I concluded. "She's the kind to stick. I'll see her."

"It's all right with me," Coach responded after a moment, "but Bud is a fitful sort of cuss and hard to hold long on any one thing. I'm skeptical, that's all."

The deal was soon arranged between the family, Coach and myself. The instructor quickly found that he was courting trouble. So did the parents. The boy's daily practice hour, under compulsion, was a stormy one. He did not take well to restraint and wanted to play, eat, sleep and generally deport himself to please himself. Our line, in spite of some wavering, managed to hold. His mother and the fact that he did like golf, even if he took it grumblingly, finally saved the day. In a month the boy was making some beautiful shots. He was beginning to fill out in weight, and he partially reconciled himself to discipline for the first time in his life. Coach did not handle him with gloves, either. I sometimes thought that he "bore down" unnecessarily hard on occasion just to get even for so much trouble. In six weeks Bud gained nearly 10 pounds. The instructor began to exhibit a little enthusiasm about his driving and putting. I asked him about it one evening.

It was a contest between youth and experience.

"Not bad for a kid," was the brief rejoinder.

At the end of two months the miracle had almost happened. The boy was 100 per cent improved in appearance. Nature certainly had worked wonders. Young Saunders was wild to be allowed to shoot a real game and plainly said as much. As a matter of fact, he threatened to kick over the traces unless he could play matches. The instructor still continued to bear down in an endeavor to keep the upper hand. In a measure he succeeded. Bud, however, continued his pleadings.

"You can practice a different hole of the eighteen every day, playing one hour a day," Coach finally though grudgingly relented. "It will take you up to the annual September tournament. That's positively all now."

"And then may I play?" eagerly inquired Bud.

"I'll tell you after you have played those eighteen hours and holes," was the curt response.

There was nothing more to be said, and the instructor's will prevailed. The days passed quietly enough. Bud's practice hour of just one hole a day went on. I followed the proceedings at a distance out of the corner of my eye. More weight, poise and endurance were being rapidly built up even if getting into bed at 9:30 o'clock was the tragedy of his young life. Bud worked hard during his golf hour and probably thought a lot. The completion of the last of the eighteen holes, he realized, marked the summer's finis for him. I will say, however, that the boy ceased to grumble and was taking his medicine like a man. After sinking a final beautiful putt on the last of his practice holes, he picked up his bag to go to the club house. Golf was over now for him. It had been a tough summer.

"Just a minute," called out the instructor as Bud walked off the green.

The boy turned, half expecting more criticisms.

"I've entered you in the club tournament Monday. Put your clubs away until that time. I don't want you to touch them until then. Now, go home and take a rest."

Astonishment and a slow smile spread over Bud's face. "That's—that's great, Coach! I—I wanted to play."

"Don't get the idea, kid, that you're going far in stiff competition," broke in Coach hastily, "but you've earned the right to try."

Whatever came of the event or how he fared, his charge was no longer the thin, hollow-chested lad that he had been earlier in the year. There was plenty of red blood in his growing, expanding frame.

"What chance has Saunders?" I inquired later of Coach when I heard the news.

"I don't know. It depends on whether he has developed nerve enough to last. He can shoot a good game if he controls his temper and takes it easy."

"I'm sure he will." I was pulling for the boy all the time. It would not, of course, be an easy match against the veterans. I suspected that Coach Peyton—more perhaps than any one realized—wanted him to make a showing. They had been much together in spite of varying strained relations. At any rate, the die was cast and the boy had entered.

The qualifying rounds began. Saunders barely managed to make last place before the entries were closed—not an auspicious start. The grind of the two days' match play started next day. Luck was with Bud in the morning, for he was paired with one of the older men who happened to have an infected finger which bothered him. That saved the game. In the afternoon he had another piece of good fortune by meeting one of the best of the field, a young business man, who was erratic and sadly out of practice, however, because of traveling on the road a good deal of the summer. Even with this advantage, the boy was forced to the limit to win.

"Your charge is doing well," I remarked to Coach at night.

"Played poorly. A couple of lucky breaks. Almost deserved to lose so far. Suppose he will fade out in tomorrow's semifinals." Coach made his reply in his usual appraising tone.

But I felt that Saunders was beginning to find himself. His play had perceptibly steadied over the last several holes which he won by making good shots. Of course there remained the question of endurance and ability to stand the gaff.

"He's in on the finals," I fairly sputtered at noon the next day as soon as the morning's game was actually completed. "That kid is playing golf!"

The coach said nothing but looked thoughtful. The day was warm and the players coming in showed signs of wear. The morning round had also seen the elimination of two of the leading favorites. Only the finals now remained.

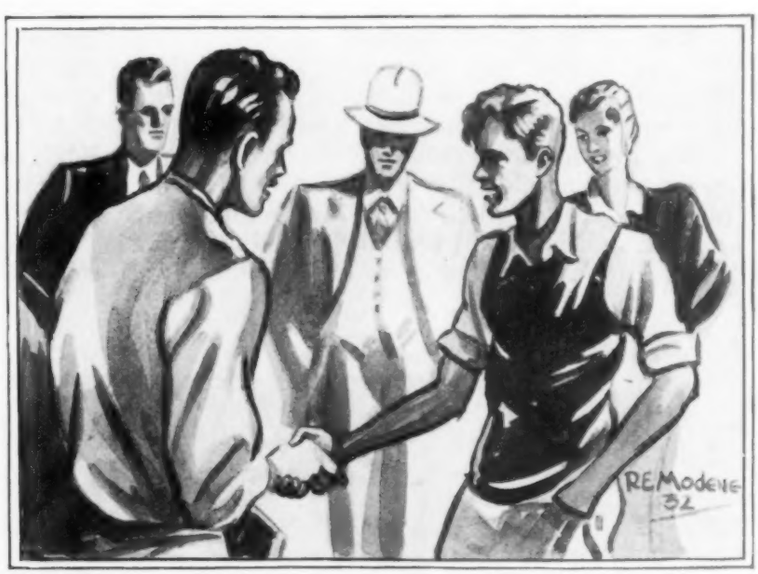
Lunch passed quickly and 2:30 o'clock approached. It was time for the game. Quite a gallery collected to witness the finish of the contest between Amos Miller and Bud Saunders. A sharp difference of opinion existed as to the probable winner of the annual tournament. Miller, about 35 years of age, was one of those steady reliable veterans who are always in the game to the last putt. It was never wise to concede his opponent the match until it was ended. The contest seemed clearly between youth on one hand and experience on the other, with the latter having the advantage. Instructor Peyton was beginning to be a little nervous. After all, he had some responsibility in the matter. We were talking together in the workroom when Bud came downstairs to get his clubs before going out for the match. Could he stand up under the strain?

"Just play against the par of each hole, Saunders," directed Coach. "Don't mind Miller's good ones either. Some holes he'll win and some he won't. Just play against the par of your card. I'm going to look it over when you come in."

Bud replied a little jerkily: "All right, Coach. I'll do my best."

I could see that he was fairly white about the mouth. The game began with Miller teeing off. Bud, as directed, played against par instead of against his opponent. At the sixth hole he was 2 down. Not a brilliant success so far. The crowd, judging from numerous comments, had already concluded that Saunders was playing much too carefully, not taking enough chances. Curiously, too, it was the veteran Miller who was cutting loose and winning when necessary by daring strokes. His putting was positively audacious, but nevertheless the balls dropped into the cup. Coach and I walked along, now and then separated in the crowd. Neither of us had much to say; we just watched the game. On the ninth green an unlucky roll for Miller lost a hole, and the kid was only 1 down. That slip helped a lot. The fifteenth was also lost to the veteran. Coming up to the sixteenth therefore they were even, and the match was halved. The crowd sensed a battle royal, a fight to the finish. It was being given a real thrill.

There were some odd angles also emerging from the contest. Why was Saunders always breaking even but seldom winning? From appearance his game suffered in comparison. Two or three times by taking the slight risk of a lucky stroke he might have garnered the lead. The gallery was still of the opinion that the boy was lacking the punch that makes champions. This, however, was not altogether true. The two were playing entirely different games—an almost opposite type of duel. Was Coach overdoing it when he ordered young Saunders to shoot only at the par of each hole? I confess I could not answer Any minute might tell the



Bud shook hands with his opponent—the final gesture of courtesy that one good sportsman extends to another.

tale. Coach himself gave not the slightest evidence of how he felt about the matter.

Miller was playing to win as never before. Only two holes to go, and the score was even! The veteran's drive to the seventeenth was a beauty. But for an accidental bad hop into a trap, the hole would easily have been his—and rightly. It gave Bud a new lease on life, however, and a chance to halve, which he did. Going to the eighteenth, it was anybody's game. Comments were freely made but mostly against Bud Saunders. The gallery was on edge with tension and expectancy. The drives of the two players for the last hole were about the same. Miller almost foozled his second but, thanks to another daring putt, he easily squared the match. All even on the eighteenth and extra holes to play! What a setting! Bud had turned in a 73, 1 over par, but so far not good enough to win.

The nineteenth hole passed, each of the players garnering two birdies. Going to the twentieth, Miller lashed a tremendously long drive to the left, a few feet into the rough. Not a dangerous place at all, merely requiring a fairly good second shot. The drive was such a long one that it left him not far from the pin. Bud played carefully straight down the course and, as usual, plainly sacrificed distance for accuracy. Still "away," his second was barely to the edge of the green—on by only a few inches, a rather promising position. The crowd sensed some kind of a turning point as it centered its attention on the other player. Miller did not evidence any emotion but played out safely. It was a fine shot, a trifle high perhaps, as the freshening breeze seemed to carry the ball just over the green to one side instead of dropping it close to the flag as at first appeared likely. It was still Miller's turn to shoot first again. The pressure was getting to be terrific.

"This match may go several holes yet," a neighbor on my right remarked.

"Watch Miller rim the cup," said another. "I'll bet he does, even from where he lies." But there were no takers for the proffered wager.

After a brief inspection of the ground, the veteran shot confidently, allowing for the roll. The green proved much faster than anticipated, however, and his ball overran the hole by some 7 or 8 feet. As he had been sinking this kind of ball regularly all afternoon, his position looked safe enough. It was the kid's turn to shoot.

"Sink her, Buddy," some one in the crowd spoke up, ignoring all rules. "Here's your opportunity. Take a chance."

I could see that Bud's hands shook as he drew out his putter. It was a par 4 hole. He was already on in 2. What would he do? Play for safety first or chance the long putt? Coach's face was set, and mine was too, I guess. A decision had to be made one way or the other. The boy played close to the hole for a sure par 4. He again failed to take advantage of an apparent opening and victory. A few groans of disappointment went up.

"The kid should have tried to hole out," was the general verdict of the crowd.

"He's going to lose in the end by that kind of performance," a player behind me voiced his opinion.

Miller now took his stance and putted deliberately. It looked like a sure shot—no question about it. At the very edge of the hole, however, a few blades of grass deflected the course of the ball ever so slightly and held it back. Trembling on the edge of the cup, the ball unexpectedly stopped dead and failed to drop in. Saunders, who had turned his head away while waiting to hear the ball fall into the cup, stood stock still. It meant everything. The gallery gasped. Bud, who had played safely, stepped up, sank his putt for a par 4, and the match was over. I watched with satisfaction and some quickening of pulse as he shook hands with his opponent, the final gesture of courtesy that one good sportsman extends to another. In a few minutes the crowd, which had swarmed around the players, began to scatter. The boy edged over toward us as soon as possible.

"Let's see your card," said the Coach briefly. Bud handed it to him without a word. "A par game for the twenty holes," announced Coach significantly, looking it over. "Plenty good enough for any one."

An expression of great satisfaction was in the boy's eyes as Coach patted him on the shoulder. Both health and mastery over himself lay in that game.

"Splendid," I said, reminiscently, thinking of many things.

Henry M. Mayer

Outdoor Meals
Aids to Hot-Weather Morale

By E. M. GERAGHTY

ARE YOU planning to stay at home this summer? If you are, I hope you will have many of your meals outdoors. There is a great deal of fun in adventuring with everyday things, and much gayety and interest can be introduced into meal-times. One does not need a spacious garden or a terrace of great dimensions. The back porch, the shade of the apple tree or a secluded nook among shrubbery will provide all the "background" that is necessary; the rest of the setting may be simple, too.

Imagine a restful spot set for a quiet meal, a luncheon or supper before dark—paper tablecloth and inexpensive dishes and glassware. In this setting I'd like to serve chicken salad—half-inch cubes of tender chicken and quarter-inch cubes of crisp celery, marinated with a plain French dressing, then drained well and dressed lightly with mayonnaise—in a well chilled bowl lined with crisp, spicy watercress. To contrast with the salad and enhance its coolness, I should want a hot vegetable. Asparagus would be perfect if it is possible to secure it. It should be steamed, seasoned well with salt and a bit of white pepper, dressed generously with melted butter and served piping hot. If asparagus is not available, the midribs of Swiss chard may be used, prepared and served as suggested for asparagus. Crunchy hard rolls and plenty of good coffee, either hot or iced, add a finishing touch.

Fresh fruits are excellent for the end of the meal. Fresh pineapple cubes and halves of fresh strawberries, as cold as possible, may be put together in a bowl at the last minute and sprinkled sparingly with fruit sugar. What could be better? Later in the summer, delicious and decorative desserts may consist of sliced white peaches mixed with big dusky blueberries with a misty gray bloom still on them, or halves of small, golden-centered ripe melons with the centers filled with sliced white peaches, or white

peaches and red raspberries served together. Crisp ginger wafers would be good with these dishes. One of my favorites for a torrid day is lemon sherbet made with a little cream in the mixture and served with a generous topping of uncrushed red raspberries.

While friends who are motoring in Europe or fishing in Canada may write of the wonderful music or the gorgeous moonlight which they have at the dinner hour, the stay-at-homes may also enjoy the moonlight and may listen to music, lilting and gay, affording escape from stock reports and demanding telephones.

Picture another attractive spot for dinners on summer nights—a clear ivory damask cloth covers the table; beautiful china and fine glassware add decorative notes. For the food I should like to have a first course of iced Spanish melon, deep rose color, with a faint touch of rum flavoring. Then I should serve roast ham, boiled, skinned and covered thickly with brown sugar, dotted sparingly with whole cloves and roasted in a pan with 3 apples, 1 pint of grape juice, one-fourth cup of orange juice, 2 tablespoons of lemon juice and 2 cups of water. Basted freely with this liquor, the ham comes out of the oven a gay, tawny brown, gleaming and crisp. The surface should then be studded with halves of English walnut meats and candied cherries, and the ham placed on a service platter and garnished with crisp curls of pale green cucumber and deeper emerald cress to add a note in keeping with summer coolness. Potatoes are not a hot-weather vegetable, but fresh green peas, tender and sweet, cooked with a few leaves of lettuce and dressed with a generous bit of salted butter and perhaps a fleck of white pepper are most acceptable after a hot and tiring day. The truly American vegetable, beloved by men, is green corn; it is at its best when it is cooked in whole milk with a bit of salt added and, immediately before being served piping hot, brushed lightly but thoroughly with sweet butter. Hot baking-powder biscuits, fresh from the oven and delicately brown, and plenty of excellent coffee, hot or iced, follow.

After this hot food, a simple, well chilled watercress salad with chives and French dressing will be relished; and for dessert, frozen custard and squares of rich black chocolate cake form a fitting climax.

Another tempting menu consists of Casaba melon, coolly green, flecked with fresh lime juice; salted pecans; roast crown of young lamb, a glistening, dark walnut color on the outside, tender and juicy within, delicately flavored as lamb can be, and a quivering, fresh mint jelly. If potatoes are served, they should be mashed, light as the proverbial feather, smooth as a politician and moist enough to beat up creamily, and piled with a deft touch into a baking-serving dish; "wells" may be made with a spoon and filled with sweet butter, the top smoothed over like a stucco finish and the dish popped into a hot oven and left until the top crusts over to a carnelian brown and the little peaks are a darker note. Field grown, first-of-the-season tomatoes, meaty and full flavored, cut in thick slices and sprinkled with salt and pepper are delicious, topped with a thin dainty strip of bacon, baked until thoroughly heated, and then broiled under a hot flame until the top rim is brown and the bacon is crisp. For the leafy vegetable—which one is supposed to consume daily—Swiss chard, hot and finely flavored, delicate as lettuce and seasoned only with salt is excellent; with this, Hollandaise sauce may be served. Then, to add a purely American touch, hot cornbread, golden crisp but meltingly soft inside, may be included in the menu. The beverage will be coffee.

After this course, icy cold cucumber wafers, marinated in French dressing, well drained and served on young lettuce, afford a refreshing note. And now, to please the men I suggest a deep apple pie, made from fresh red apples, with just enough sweetening, a touch of nutmeg and a suspicion of cinnamon. It is baked until the apples are a juicy, jelly-like mass and the crust is a flaky, golden brown; served with it are matchlike strips of Swiss cheese.

Really, the night is cool, the falling petals drift across the garden bringing fragrance and a lull of peace, and the "big problems" of the day are forgotten as one sinks gratefully into a relaxed, restful haze.

Lowrey-Sill

"And the cares of the day shall be all charmed away."

The MAYOR and the MILKMAN

Two hours more to wait! This was the last straw.

A STORY IN WHICH POLITICS BOWS TO PASTEURIZATION

By

Charles H. Lerrigo

YOUNG Dr. Manners stood on the Union Station platform at Green Meadows, his gaze straining eastward. From that direction at this very moment should come the train bringing his bride of a few months to join him after six weeks' separation. The minutes passed. His gaze grew more anxious. Again he looked at his watch. What could be the matter? Then he walked to the bulletin board, which he should have consulted long ago, and discovered that the train report read "two hours late."

Disconsolate, Dr. Manners walked back to his office in the City Building. Two hours more to wait! He doubted that his wife ever would arrive. This, he decided, was the last straw. When she did come he would tell her to leave her bags packed, and they would take the next train back. Green Meadows was no place for a scientific man. Nice enough people, but always from two hours to two years behind. Expecting a city health officer to lower their infant mortality and then turning down his request for milk pasteurizing chiefly because the mayor had an interest in the town's big dairy! He was bitter. Actually there were tears of chagrin in his eyes. That was why, instead of entering his office at the front door he used his pass-key to the side door of his laboratory.

A dash of cold water on face and hands, a brisk toweling; he felt better. Some one was in his office. The thin-paneled door with its open transom admitted the sound of voices.

"I can see him later," rumbled a masculine tone. "I just dropped in to talk pasteurization. Doc and I don't look at it just the same way."

Then came a great surprise! Dr. Manners, startled, heard the sweetest voice on earth make reply. His hand was on the door knob, as he was about to burst in on them, but the words halted him.

"I can tell you about pasteurizing. I'm Mrs. Manners and I helped in the laboratory for ages before Doctor and I were married. He's going to be the most surprised man to find me here. You see, the train is held up at Junction City. But I just couldn't wait when I found that the busses were running. While I'm waiting for him I'd love to tell you about pasteurization."

Wonderful words. Little puss! She could not wait, either! And she did know about pasteurization—all about it.

"Well, you see, Doc wants all milk to be pasteurized—all of it," boomed the masculine voice in reply. "Now, I know that's all right if milk ain't just what it ought to be; but look here—my brother has a fine dairy. You know what he done to his cows? Had all of 'em tuberculin tested!"

"Isn't that fine! I'm going to tell Doctor we must buy our milk there. But, you see, you have one wrong idea. Pasteurization isn't to protect dirty milk. A good health officer won't pass dirty milk at all. It must be clean to begin with and pasteurized for absolute safety—safety against all disease germs, you know."

"But what is safer than testing?"

"Well—did you ever hear the dairyman's jingle?"

"Can't say I ever did."

"It's really good, considering it was written by a 4 H girl only 11 years old. Every dairyman should adopt it. I'll write it for your brother. Let's see if I can remember it. It goes something like this:

I keep my dairy bright and airy.
My herd must be from sickness free.
I test my cows, I test my men;
To make all sure I test again.
Then to compete for safety's prize
And crown my work, I pasteurize!

"I reckon you and the doctor got educated together. He's a regular crank about pasteurizing."

"Yes, and you know how a crank makes things go. Doctor will do it."

"Expects to stay here, does he?"

"Oh, yes. Doctor thinks this is a lovely place—fine clean town, high-minded people, good schools and such nice folk to work with. Doctor was telling me about the mayor in his last letter. He is such an intelligent man, it seems. The doctor loves the way his face lights up as things are explained to him. He thinks that the mayor is just about ready to support a pasteurizing ordinance and the mayor is such a power that what he says goes."

"I'll bet the mayor likes Doc, too," replied the male voice. "But perhaps he don't know the doctor likes him. I understand the mayor don't see just the same way as the doctor, but Mr. Mayor's smart enough to know that the scientific way wins in the end, and he'll put through a pasteurizing ordinance if Doc insists on it."

"He's a regular crank about pasteurizing—but you know, a crank makes things go."

"Well, Doctor is certainly sold on pasteurizing. So am I! We'll have to insist, because Green Meadows needs it."

"And you'll buy your milk of the Green Meadows Dairy if my brother arranges for pasteurization?" He laughed as he spoke.

"We surely will. You see, we are going to have to be very particular about our milk. I won't tell you why right now. But you come to see me—oh, early next October and—well, you'll see."

"Well, you tell the doctor I'm sold. Tell him Green Meadows Dairy will pasteurize. I must go, but I'll see you again."

"Oh, you must come in often. You've been so nice. I just feel as though you were my welcome to Green Meadows."

"That's it. And my brother will be in, too. Tell the doctor we're for him."

The two doors worked simultaneously, the slam of one seeming to fling wide the other. Dr. Manners held in his arms the joy of all life, and the warmth of her young body melted all his bitterness. They talked and talked, but the young health officer said nothing about taking the bags right back to the station. On the contrary, he suggested that they go to look at a cottage—just a wonderful cottage—he was sure she'd like it.

"Oh, but I'm hungry! I've waited and I've talked so much. You ought to have heard me give a lecture on pasteurized milk."

"I did, Honey. It was wonderful! You're going to get the surprise of your life when you hear who was your pupil."

"Not if he was the mayor of Green Meadows," replied Honey, calmly.

"You knew it! You knew it all the time?"

"I made a good guess. It wasn't so hard, considering that I saw him come hatless and coatless from the mayor's office. Then, think what you had written. . . ."

"Let's say 'think what you said I had written,' Honey."

"But that's what you meant to write, Old Ironsides. You needed me to lubricate your steam roller. You know you did. And he's all for us. And, Honey, since we must buy our milk of this Green Meadows Dairy we just have to get their pasteurizing plant going right soon. Remember, darling—remember, the tenth of September."

The doctor seemed to know what she meant.

Anemia

By
Cyrus C.
Sturgis

ANEMIA may be defined as a reduction in the amount of red coloring material or hemoglobin of the circulating blood. The intensity of the condition varies from minor changes to a serious reduction in the hemoglobin, which is from 80 to 85 per cent below normal. "Anemia" is a general term and includes many entirely separate diseases which have in common only the decrease in hemoglobin. The decrease may be due to a diminished amount of hemoglobin in each red blood cell; or the amount in each cell may be normal, and the anemia may result from a decrease in the red blood cells below the normal number of 5 million per cubic millimeter for men and 4½ million for women. In the grave types of the disease, the red blood cell count may be below 1 million per cubic millimeter.

Is It Anemia or Merely Pallor?

The usual symptoms that are dependent on the anemia itself, regardless of the type, are pallor, shortness of breath, palpitation of the heart and sometimes swelling of the ankles. It should be emphasized that pallor alone does not necessarily indicate the presence of an anemia. Some persons are congenitally pale although their blood is normal; temporary pallor may also be associated with undue fatigue or a fainting attack, at which times there may be a transient diminution of blood in the skin as a result of constriction of the blood vessels. A persistent pallor developing in a person who has previously had a normal color suggests the possibility of an anemia and should be thoroughly investigated. The degree of anemia can be accurately estimated by the examination of a drop of blood obtained from the lobe of the ear or the tip of the finger. The hemoglobin content is determined by comparing the color of the blood with a permanent standard and by expressing the result in percentage of normal. By means of a special apparatus the number of red blood cells may be counted with the aid of a high power microscope. Another valuable laboratory method of studying the blood is to permit a drop to spread between two thin glass slides and, after drying for a few minutes, to apply one of the specially prepared blood stains. From a careful study an experienced observer may secure helpful information by noting the various changes that occur in the formed elements of the blood.

The many different types of anemia vary widely in their causes, symptoms, treatment and outlook for recovery. Any attempt to classify them is associated with difficulty and is confusing to the nonmedical reader. The general terms "primary" and "secondary" anemia, however, are often used and fulfil a definite purpose. A secondary anemia, of which there are many kinds, means an anemia that is secondary to some type of chronic disease or that follows a hemorrhage. Many chronic diseases have such an anemia as a complication, the most common being cancer, tuberculosis, Bright's disease and some of the acute infections, such as typhus fever, rheumatic fever, sepsis and malaria.

The primary anemias are few in number and may be defined as anemias arising from unknown causes. Included in this group are chlorosis, an anemia of young adult girls which is attributed to poor hygiene and is now infrequently encountered, and pernicious anemia (Addison's or Biermer's anemia), which occurs more commonly and is a disease of major importance. The decision as to whether an anemia is to be classified as a primary or a secondary type depends on the presence or the absence of a recognizable cause, such as cancer, and the character of the changes in the blood as determined by an experienced observer.

Self Medication Must Be Discouraged

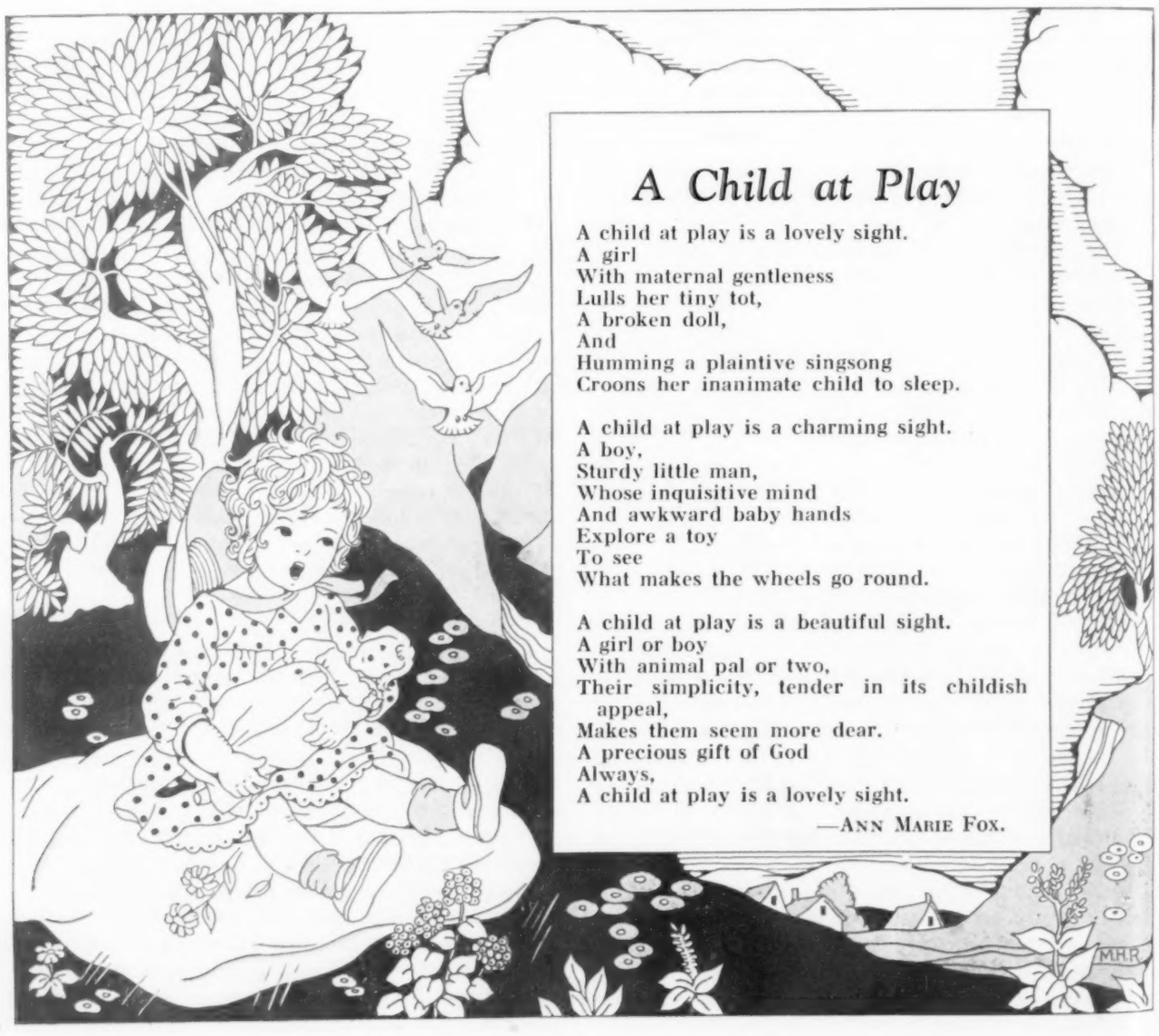
The rational treatment of the anemias must be preceded by a careful study of the individual patient in order to determine accurately the exact variety of the disease, for the treatment varies accordingly. Any attempt at self medication by the patient should be discouraged, as an improper form of treatment may be used, and not only will it fail to produce the desired result but during this time there may be a change from a readily controlled condition to one in which the outlook is hopeless.

The anemia following hemorrhage, which is most frequently associated with trauma (gunshot wounds or various accidental injuries), bleeding peptic ulcer, complications incident to

childbirth, and hemorrhoids, should first be treated by controlling the source of the bleeding. In acute hemorrhage, when the bleeding has been stopped, it may be desirable to resort to the transfusion of a pint or more of blood. The bleeding having been controlled, various measures are employed to assist the body in forming blood at an increased rate. For this purpose an abundant, well balanced, nutritious diet and preparations of iron are used.

In various types of secondary anemias the most important therapeutic measure is to remove, if possible, the underlying cause, whatever it may be. In chlorosis there is a specific cure in the form of large doses of iron. Removal of the spleen is followed by excellent results in rare forms of anemia of a congenital nature and in some types of purpura, a disease characterized by spontaneous bleeding into the subcutaneous tissues and mucous membranes.

The greatest advance in treatment of the anemias dates from 1926, when liver was introduced in the treatment of pernicious anemia. Later, a liver extract was used for this purpose, and more recently it has been discovered that dried hog's stomach has the same striking effect as do liver and liver extract. When these substances are given to a patient who is critically ill with pernicious anemia, the effect is remarkable, for within a few days there is a striking increase in appetite, a gain in strength and a rapid disappearance of all symptoms of the anemia. The symptoms that are due to changes in the nervous system are much less favorably influenced. Although these substances produce marked improvement in patients with pernicious anemia, it cannot be said that they are a cure in the strictest sense of the word, as a patient must continue their use indefinitely in order to avert a relapse.



A Child at Play

A child at play is a lovely sight.
A girl
With maternal gentleness
Lulls her tiny tot,
A broken doll,
And
Humming a plaintive singsong
Croons her inanimate child to sleep.

A child at play is a charming sight.
A boy,
Sturdy little man,
Whose inquisitive mind
And awkward baby hands
Explore a toy
To see
What makes the wheels go round.

A child at play is a beautiful sight.
A girl or boy
With animal pal or two,
Their simplicity, tender in its childish appeal,
Makes them seem more dear.
A precious gift of God
Always,
A child at play is a lovely sight.

—ANN MARIE FOX.

Problems and Perplexities of the Preschool Child

By
Lee W. Thomas

"There is a new baby in the crib. He looks all right, but he doesn't belong in my place."

OUR CHILD has graduated from the school of babyhood where he has had the protection of mother's arms and nurse's untiring care, where his every move has been carefully watched, his diet selected and prepared with precision and accuracy. Now he is attending the school of experience. His inquiring mind is asking: "What will happen if I touch that bright object?" "What is that in the next room?" "I wonder what Brother Bob is eating?" Through an endless new life, inquiring he goes, knowing nothing of the hazards and dangers that it holds for both his mind and his body.

"There is a new baby in the crib I used to sleep in," he reflects. "Mother is giving this new baby all the attention she used to give me. Daddy seems to be paying a lot of attention to him, too, and Nurse, who used to do nothing but take care of me, spends most of her time with this new one. What is it all about? The world is all upside down. What can I do about it? Where did this new baby come from? Why should he take my place, have my crib and take all of Mother's, Daddy's and Nurse's time? Dad took me in to see the new baby and, although he looks all right, he doesn't belong in my place; and when Daddy said, 'kiss the new baby,' I felt like giving that baby a good slap instead.

"But everything is all right now. I heard Daddy tell Mother that he thought I was angry about the new baby, and so she took me in her arms, told me that the new baby was my brother, and her and Daddy's baby, just as I had been, and that I was his big brother and must help them to bring him up to be well and strong like I am. That straightened the new baby out with me, and I guess he belongs here, all right." And so our child has had his first lesson in psychology.

How many heartaches little ones could be saved if parents would only study the children's minds and take the time to explain the true meaning of the wrong mental impressions which the child may express in his manner or direct speech. Often in his routine examination the doctor may be compelled to do something that is painful to the child. Forever after, the doctor is associated with that one acute pain. Realizing this the mother may correct the child's mental attitude toward the doctor, for she has gained the child's confidence; but, in many instances, the mother forming the brilliant idea that here, at last, she has a way to make Junior behave, often says: "Junior, if you don't stop, I shall have the doctor see you," and so this impression regarding the doctor may be carried through childhood to adult life. There is also a common practice among mothers of constantly warning misbehaving children of what their father will do to them when he returns home at night. The father, who is away from home during most of the child's waking hours, should have some pleasant contact with the child when he is at home and should not be constantly urged to punish because the child misbehaved in his absence.

There is one branch of protection of life and health of the preschool child that is seldom dis-

cussed—protection of life and health against accident. The preschool age, notwithstanding all possible safeguards which we constantly endeavor to employ, is one of the most dangerous periods of life relative to accidental injury and death. In 1927 there were 83,408 deaths caused by accidents, reported from about 90 per cent of the total population of the United States; of these deaths, 8,150 were among children of preschool age—5 years or younger.

Certain kinds of accidents occur more frequently than others among preschool children; of these, the most outstanding, with their respective percentages of fatality of injuries among children under 5 years of age, are shown in the accompanying tabulation:

CAUSE OF DEATH	PER CENT OF FATALITY
Burns and scalds (except those due to conflagration)	27.2
Automobiles	14.6
Mechanical suffocation	10.2
Drowning	7.4
Poisoning (aside from that caused by foods and animals)	6.6
Falls	6.5
Conflagration	4.2
Poisoning by foods and animals	3.2
All other accidents	20.1

The following hazards to child life may exist in and about homes:

Burns and scalds may result from unprotected stoves or fireplaces, from matches carelessly left where children may reach them, from fire making or play about bonfires, and from the use of dangerous fireworks.

Drowning hazards are found in cisterns, unprotected wells, brooks and tubs of water.

Falls occur in unprotected play spaces or on porches lacking guards or screens.

In respect to poisons, care should be taken not to leave medicines, poisonous antiseptics or chemicals where they can be reached by children.

Other dangers that emphasize the need of protection of small children are excessive heat, sharp tools, inadequate play spaces, unguarded stairs or steps, and street hazards.

By far the most important factor in the growth and development of the normal preschool child is provision of a proper diet. Certain types of food are necessary for the growth and development of the child, especially for the growth,

Milk is a most important food for the young child.

The mother may do much to encourage her child's confidence in the doctor.

development and preservation of the teeth of the growing child. The following information is summarized from a book published jointly by the department of health and the department of education of New York City, entitled, "Food, the Teeth and Health," and is the consensus of opinion of the most eminent physicians and dentists of the day:

Milk is the most important of the foods that should be in the diet of the preschool child. One quart of milk a day should be given, and it must be fresh and clean. A glass of milk is best served with a slice of toast or a cracker.

The leafy vegetables, such as lettuce, romaine, water cress, cabbage, brussels sprouts, chard, kale, spinach, turnip tops, beet tops, dandelion greens, endive, asparagus, celery, string beans, and other vegetables, such as beets, peas, carrots, turnips, potatoes, cauliflower, lima beans, tomatoes and boiled onions afford a wide variety for the diet of the school child. The quantity needed varies according to the age of the child. The vegetables that are boiled or stewed should be cooked as short a time as possible, in a small amount of water. The water that is not absorbed by the vegetables should be used in the making of soups and gravies, since it contains minerals and other substances which are good for the child.

The selection of meat may include beef, lamb, chicken and mutton. Any kind of edible fish may be given, but care should be taken to remove the bones.

Alimentary pastes consisting of macaroni, spaghetti and noodles, either with or without cheese, served as separate dishes or in soups and broths are excellent.

Eggs may be used in any form, preferably cooked.

Cooked cereals and the cold "ready to serve" cereals are needed for variety.

Bread should be a day old, cut thin and freshly dried.

Butter is a valuable food for growing children. It is false economy to stint the butter ration.

Fresh cottage cheese, cream cheese and American cheese are good for children.

Children need raw fruits, stewed fruits and fruit juices. Among the raw fruits are ripe apples, bananas, pears, oranges, grapefruit and other seasonal fruits. Among the cooked fruits are stewed or baked apples, prunes, pears, peaches and apricots. When fresh fruits are expensive, dried fruits such as apples, apricots and prunes may be used or canned fruits or vegetables may be substituted. Fruit juices such as those of oranges and grapefruit are indispensable. The juice of canned tomatoes is also excellent.

One teaspoonful of cod liver oil should be given two or three times a day, especially in the late fall, winter and early spring months.

Soups such as beef, mutton or chicken broths, thickened with oatmeal, rice, barley or cornstarch may be varied with vegetable soups of peas, beans, lentils, spinach, potatoes, onions, tomatoes, celery and asparagus.

Desserts suitable for the preschool child include junket; rice, cornstarch or farina pudding; fruit gelatin; custards; ice cream and cookies. (Such sweets as jam, syrups and preserved fruits and candies should be given only occasionally and should then be eaten after the regular meal is finished. Discretion must be exercised in regard to the quantity allowed.)

Many articles of food in this list should not be given to a 2 year old, but are suitable for children from 4 to 6 years of age.

It is during the period of early life that enduring habits develop. Even at 2 years of age a child has developed habits of regular eating, resting, exercise and elimination. Neglect to continue the habits of regularity formed in infancy lays the foundation of bad habits in early youth and in adult life that endanger health and life. It is at this period that definite mental trends are developed. Education should be positive, never negative. Let the child know the happiness of doing right, not the ill results of doing wrong. Obedience to authority at home lays the foundation of obedience to laws of the state and of the church. Teach the child the right of ownership. Explain to him that his playthings belong to him and that he should care for them, but that he must not take playthings from other children or belongings from any one, without consent. Such teachings establish in the mind of the child the right of ownership and the ownership rights of others—knowledge essential to happiness in later life.

Teach the child the importance of cleanliness and health. See that the hair, skin, teeth and nails are clean, for cleanliness of body is the first weapon against disease. Regularity in habits of eating, exercising, resting and eliminating also prevents disease. Children should be vaccinated against smallpox and immunized against diphtheria before 1 year of age. Measles, mumps and many other infectious diseases can be controlled. Consult your physician about them, for he is the minister of health to your family. Take your physical ills to him.

℞

For Relief from Dull Dogdays We Prescribe the August Issue of Hygeia, Which Will Contain

Marian Castle's sympathetic and reassuring article on cancer, entitled "Are You Afraid, Too?"

Solon R. Barber's refreshing article on "Fruit Juices, Ades and Pops."

Mel Wharton's description of "Olympic Village—The Answer to an Athlete's Prayer."

Curtis Billing's timely advice and warnings concerning "Mishaps on the Tourist Trail."

Louise Price Bell's admonition, "Parents, Cooperate with Your Child's Physician," which contains many valuable suggestions.

Another thrilling golf tale by *Dr. Henry G. Langworthy.*

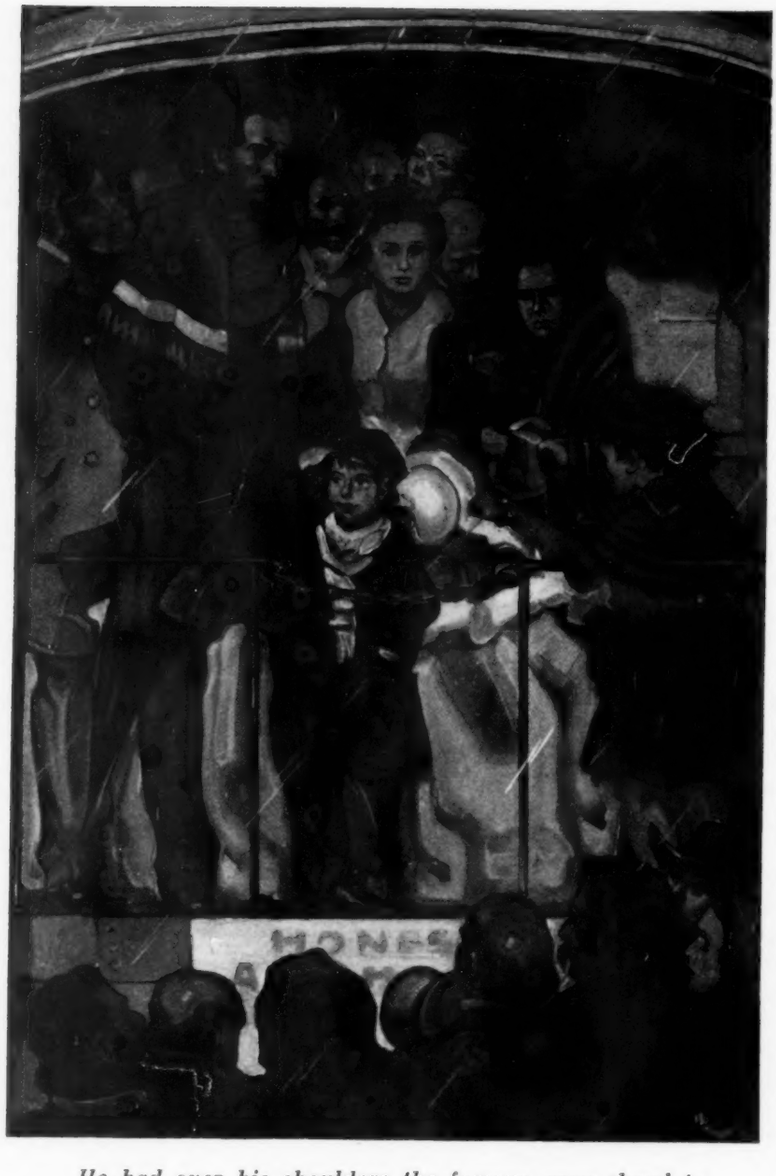
Madelin Blitzstein's story of the Wills Eye Hospital, which this year celebrates a century of service.

Dr. Rachel Ash's article on "The Annual Rund-Up."

A discussion of mosquitoes and the water garden by *Ernest W. Steel.*

Dorothy Deming's story, "Magic by the Hour," which will be a revelation to many readers who are not yet acquainted with blessings of the hourly nursing service.

And many other informative and interesting articles and stories by well known writers who are recognized as authorities in their various fields; among these contributors will be *Dr. Milton H. Shutes, Miss E. M. Geraghty,* and *Dr. Claude Lillingston.*



He had over his shoulders the famous gray shawl to protect him from the cold February drizzle.

Lincoln and the Doctors

By

Milton H. Shutes

CHAPTER IX

LINCOLN records in a letter to his old friend, Dr. Anson G. Henry, then in Lafayette, Ore., that he had suffered from a throat infection. Under date of July 4, 1860, he writes:

My dear Doctor,

Your very agreeable letter of May 15th was received three days ago. . . .

Our boy in his tenth year (the baby, when you left) has just had a hard and tedious spell of scarlet fever and he is not yet beyond all danger. I have a headache and a sore throat upon me now, inducing me to suspect that I have an inferior type of the same thing.

Our eldest boy, Bob, has been away from us nearly a year at school, and will enter Harvard University this month. He promises very well, considering we never controlled him much.

Write again when you receive this. Mary joins in sending our kindest regards to Mrs. H, Yourself, and all the family.

Your friend, as ever,
A. Lincoln.

The human-interest portion of this letter is quoted incidentally to reaffirm the existence of the close friendship of the Henry and Lincoln families but principally to record this minor illness of the presidential nominee. It was probably an attack of acute tonsillitis, or it might have been what would now be termed a streptococcic pharyngitis. Lincoln must have been subject to more or less trouble then, as Mrs. Lincoln was always so solicitous about his going out without a muffler or something about his throat; or maybe because of his long, stooping thinness, her anxiety was directed toward that "tubercular tendency." We recall Herndon's description, "Thin through the breast to the back and narrow across the shoulders—stoop shouldered, inclining to the consumptive in build." Since much speculation has been in order, we may be pardoned for groping once more in that hazy vista, with the suggestion that a latent tuberculosis, which he feared, might have been gradually breaking loose in his hard-muscled body during the war-harassed days in Washington and might account in part for his haggard, ashen, pale face, his emaciation and his fatigue.

Our stalwart hero by no means felt strong and fit every day of the year, year after year. Lieutenant-Governor Bross of Illinois tells of meeting him in May, 1860, when leaving the Republican convention at Decatur: "I found Mr. Lincoln sitting on a trunk, alone, at the end of the hall, with his head bowed down and lean-

ing it upon his hand. 'I'm n[illegible] ry well' he said."

Research brings to light other little items of interest or samples of wit as when Lincoln referred to a certain section of the South, "where most men are salivated by excessive use of the Charleston Mercury," or when, on the day after the November election, Mr. Lincoln made a jocular statement to Dr. Jayne, who had shown him a telegram: "Why, that elects you, Bill. You seem to succeed as well in politics as you have succeeded in pills. If I were as lucky as you are in politics, and strong enough to beat as good a man as Murray McConnell in a Democratic district for State Senator, I would change my sign so that it would read: 'Doctor William Jayne, Purveyor of Pills and Politics. I guarantee the cure of Democratic Headaches and all the ailments of Popular Sovereignty cranks. No cure, no pay.'"

CHAPTER X

MR. LINCOLN was now President-elect and, as such, a very busy and important man. He soon forgot the unpleasantness of that mirrored double image of himself in his planning and preparations for Washington. He was apparently well and vigorous now, though still a slave to the little calomel pill.

We may be sure that Mrs. Lincoln saw to it that he took his pill, had on his rubbers and mufflers, and carried the cotton umbrella over his head during those wintry days. When he stepped on the special train of the Great Western Railroad, he had over his shoulders the famous gray shawl to protect him from the cold February drizzle. Aboard the train was Mrs. Lincoln's brother-in-law, Dr. William Wallace, the physician in charge of the trip to Washington. For now Lincoln's life, as well as his health, needed guarding. Threats of assassination had been pouring in by word and pen, and a doctor was a necessary member of that party.

Fortunately, the journey was ended in safety, despite hotel meals, winter weather and political enemies; the sun set on that inaugural fourth of March with President Lincoln safe with his family in the White House, physically tired, spiritually happy and mentally anxious. We can imagine that first night's sleep as a sound, dreamless rest, refreshing him for the first of those historic days of service to come.

From then on, his body needed all its native strength and more to resist the pressure of irregular and meager hours for food and sleep, of the swarm of office seekers and busybodies, of the machinations of political friends and enemies, of mighty battles directed by mediocre leaders, and of a million and one little annoyances that so tried his soul. And the public begrudged him even his solacing stories!

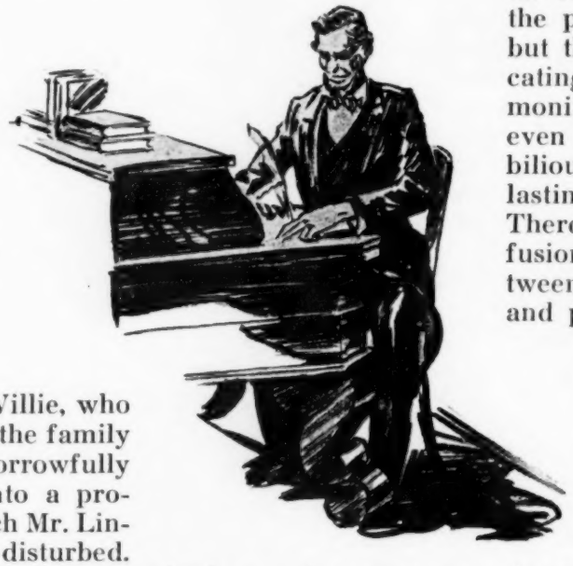
Early in the administration, Mrs. Lincoln began her habit of daily drives and insisted as her right that Mr. Lincoln accompany her; it was her only means of getting him out into the fresh air. He was often called to the cabinet room as early as 5 o'clock in the morning and had his coffee sent in to him, with breakfast put off until 9 or 10 o'clock and with Mrs. Lincoln fuming about it all. She resorted to many schemes to regularize his meals, even to inviting distinguished guests for breakfast and then sending a definite message that she and company were waiting. A favorite guest of hers was the genial Sam Galloway of Ohio, who was often present at family meals and who delighted in seeing the grim furrows on the President's face soften and alter their contour as change of thought and exchange of stories brought laughter. With eyes brightened and face lighted up, the President would leave the table, refreshed to meet the never ending bombardment of his troubles.

One must credit Mary Lincoln with a good mind and an intelligent use of it when she was quick not only to appreciate her husband's political possibilities in Springfield but now during the Presidency to recognize his greatness and his need for protection against loss of health and strength.

During the first week or two, while threats of assassination were being broadcast, General Scott had placed guards about and in the White House, and a feeling of danger and insecurity permeated the household. One night, every member of the household except the servants was taken suddenly ill, and physicians were hastily called. A rumor of attempted poisoning was started but soon quieted when it was learned that the family had eaten too well of the unaccustomed Potomac shad.

With one tragic exception there was little of serious illness in the Lincoln family. Soon after getting settled in their new home, the two younger boys came down with an attack of measles, which soon faded without complications. Dr. Robert K. Stone, a prominent physician of Washington, who was listed as a permanent member of the American Medical Association in its transactions after 1851, was selected (though politically unsympathetic) as the family physician and became a more or less frequent caller to see the President and his family. Mrs. Lincoln suffered much from attacks of severe headache, and the children

had the usual aches and pains of which most children complain. Tad was born with a partial cleft palate, and his pronunciation of certain words suffered accordingly. Judging from photographs, the postnasal cavities of the two younger boys were fairly well occluded with adenoids. But on Thursday, Feb. 20, 1862, the Grim Reaper visited the family. Twelve-year-old Willie, a counterpart of his father in every way except that he was handsome, was an object of intense love, pride and understanding. This can be illustrated by an illuminating incident as told by a relative, Mrs. Grimsley. After a certain tearful scene on the part of Tad, Willie, who was seated at the table with the family and a guest, looked most sorrowfully at Tad and then lapsed into a profound, absorbed silence which Mr. Lincoln would not allow to be disturbed. This lasted ten or fifteen minutes, when the boy clasped both hands together, shut his teeth firmly over the under lip and looked up smilingly into the face of his father, who exclaimed: "There you have it now, my boy, have you not?" Turning to Sam Galloway, he said: "I know every step of the process by which that boy arrived at his satisfactory solution of the question before him, as it is by just such slow methods I attain results."



This was the boy who became sick along with his younger brother. Tad made a satisfactory recovery but Willie, who two years before had suffered from scarlet fever and probably acquired therefrom an unappreciated damaged heart or kidney, could not resist the infection. A Washington newspaper wrote of "the illness of the second son of the President, an interesting lad of about 8 years of age, who has been lying dangerously ill of bilious fever for the last three days." The reporter was apparently ignorant of that important boy's name, and he was inaccurate by four years as to his age and by a few days as to the length of the illness.

"Bilious fever" at that time was a term used loosely by the nonmedical public and was no longer found in the publications of the American Medical Association. The disease that is now known as malaria was once called bilious fever, but during the late fifties and the sixties it was more correctly termed intermittent fever and was so referred to in the medical literature of that time. A contemporary impression that the illness was of a malarial nature is indicated by an editorial, entitled "Death of Willie Lincoln," found in the *National Republican* of Feb. 21, 1862, which describes the condition as "his sickness, an intermittent fever assuming a typhoid character."

The month of February is contributory to "lung fever" (pneumonia) and not at all to bilious or intermittent fever (malaria). If Willie had malaria in February, then it necessarily was an infection acquired during the previous mosquito season, but there are no records indicating that. Bronchopneumonia would cover whatever even Dr. Stone considered as a bilious or intermittent fever lasting two or three weeks. There was much medical confusion in distinguishing between malaria, typhus fever and pneumonia; proof of this confusion exists in the now obsolete terms "typhoid-malaria" and "typhoid-pneumonia." Bronchopneumonia would fit exactly the descriptions of intelligent Elizabeth Keckley, who spent many hours of the day and night by the sick boy's bedside. From her reminiscences, published early in 1868, the following account is abbreviated: "Exposure resulted in severe cold . . . weaker . . . days dragged . . . suddenly worse . . . feverish hand . . . labored breathing . . . lingered few days . . . died."

The shock to the mother and father was terrific. Mrs. Lincoln never again entered that sickroom, and Mr. Lincoln sank into a vast slough of grief and despond from which he only partly emerged, when on the following Thursday he again locked himself in his own darkened room and abandoned himself to grief and suffering. The next Thursday he repeated the performance, paced the floor, ate nothing and formulated the crazy resolve to dedicate every Thursday to grief over his son and every father's son that died because of the war. But Mrs. Lincoln, in desperation, sent a friend to him, the Rev. Francis Vinton of Trinity Church, New York, evidently a wise, tactful, convincing doctor of divinity; for Lincoln gratefully assured him: "There shall be no more mourning Thursdays, doctor."

Mother and Father, as they called each other, were mutually alarmed over the other's state of mind. She sought for him the timely aid by which he emerged, and which, strangely, was denied to her. After his recovery, he recognized her peril and, pointing one day through a window to a distant asylum, solemnly gave warning and counsel. To her less stable personality, the loss of the son resulted in permanent injury, but to Lincoln there came through that same pain a new birth of healing.

(To be continued)

Is Your Child a Budding Artist?

These Easy Lessons Will Guide Him to Self Expression

By CORNA SEARCY HANLIN

IS THERE a mother who has not viewed with wonderment her child's first pencil-and-paper efforts toward self expression? As she watches the really well proportioned birds, animals or houses that appear in rough outline form, she naturally wonders whether Mary or John will become a successful artist or painter.

While it is extremely doubtful that every scribbling child will become a nationally known cartoonist, a second Gibson or a high-salaried commercial artist, it is possible to guide much latent creative ability into wider channels of artistic expression.

By following these simple suggestions, almost any mother with or without artistic ability of her own may guide her child's every-day play along constructive lines and gradually lead him to a better understanding of what things are and how they are made. For the budding artist aged 2 to 3 years, profitable pleasure may be derived from this schedule:

First Week.—Provide the child with a soft lead pencil, no. 4B, 5B or 6B, and some cheap brown or white wrapping paper, such as that taken from bundles. Teach the child how to hold the pencil and how to use large free-arm movements. Allow free play, scribbling at random without any suggestions whatever, for short periods of time every day.

Second Week.—Cut out many large sized circles. Teach the child to fill in circles of the same size with the soft lead pencil marks. The child will gradually learn to stay within the confines of the line; thus he visualizes the shape of the circle. As a reward, cut out the best ones and allow the child to hold them in his hands and play with them.

Third Week.—Cut many duplicates of the three sizes of circles. Provide the child with three pencils, red, yellow and blue. Crayons will do, but pencils are better. Teach the child to color all large circles the same color, all medium sized circles another color and all small circles the third color. When each of the three colors is learned well enough to be readily recognized, allow the child to fill in another set of circles with colors chosen by himself at random. Have him name the colors of circles which you pick up and hold before him. Now suggest various common things about the house which these circles may represent, such as oranges, cookies, apples, plates, tops of cups, slices of carrots, clock or watch faces, coins, and circles on dresses, in a rug or in linoleum designs. This lesson teaches the child to follow simple directions, to recognize the three primary colors and to appreciate or understand the use of the circle as he sees it in his every-day surroundings.

Fourth Week.—Again cut circles from the patterns. Prepare home-made paste of flour and water, mixed in a saucer. Lay a newspaper on the floor, place the paste saucer on it, together with the cut-out circles and the three color-pencils. Teach the child how to paste the circles on a piece of paper to make them stay in place. Next, cut more circles from patterns; the child colors them as he desires, and is shown how to place and paste the various sized circles on a piece of paper or cardboard in a design. Then allow the child to place and paste the colored circles in a design of his own creation, to make a "picture" for Daddy's office or for Mother's room. Recall the circle forms, such as oranges or plates, which were taught the child in the lessons of the third week. This lesson teaches better control of fingers and a fundamental idea of what a picture really is—a design to fill a given space. It fixes the three primary colors in the child's memory. It also suggests unselfish purpose—the making of the work of his hands for some other person's enjoyment.

Other uses of this material will suggest themselves to the mother. These lessons may be repeated for a month at a time instead of a week, if the child is slow to grasp the idea or the colors. By the age of 3, the child should know and recognize the three primary colors readily and should recognize the circle form in all sizes in the every-day objects that meet his eye.

Carbohydrates
Donors of Heat and Energy

By F. C KOCH

IN THESE days of various and varied diets, the words proteins, carbohydrates and fats slip glibly from the tongues of many. Exactly what the terms connote is not always clear, however, to the minds that prompt those tongues. Not only are proteins, carbohydrates and fats present in food; they form part of the composition of the body also. They are known as the organic compounds, and chemical analysis shows that the three groups have points of similarity and points of difference.

Each member of the trio serves in some manner to furnish the energy required by the body; and the proteins have in addition the special function of maintaining the growth of body tissue and repairing the broken-down cell structure; indeed, without the proteins, life could not exist. They help to keep the machine in repair, while to the fats and carbohydrates falls the task of keeping the machine running, of furnishing the required energy and fuel.

Each member of the trio contains carbon, hydrogen and oxygen; and the proteins contain, in addition, nitrogen, sulphur, phosphorus and other inorganic salts. The carbohydrates may be defined as hydrates of carbon, for in them, hydrogen and oxygen are usually present in the same proportion as in water; that is, there are two atoms of hydrogen to every atom of oxygen. The carbohydrates are readily convertible into heat and muscle energy. In order that food may be properly assimilated, some of the fat ingested must be burned in the body, and in order that the fat may be burned, there must be a sufficient quantity of fuel. When a supply of carbohydrate sufficient to satisfy the body's needs is ingested, it converts fat into energy. But when carbohydrates are taken in excess, they are converted, in turn, into fatty tissue.

It has been said that "in the long run, all the energy of living matter comes from carbohydrates." Nature has supplied them with a lavish hand; they are found in abundance and are most economical. They are essential to plants and animals for the maintenance of functional activities, and their industrial importance can scarcely be estimated, for many industrial projects, such as the cotton industry and the manufacture of paper and artificial silks, are directly dependent on carbohydrates.

The list of carbohydrates includes the various natural and synthetic sugars; starches; glycogen, which is the starch found in the liver cells and muscles of animals; inulin, which occurs in plants as a reserve foodstuff; dextrin, an intermediate product between starch and sugar; cellulose, the framework of vegetable cells; gums, and mucilages.

Carbohydrates originate in the main in the green plants through the action of sunlight and chlorophyll on water and carbon dioxide, forming carbohydrate and oxygen. Animals do not possess the power of thus originating carbohydrates, although they are able to build up polysaccharides, such as starches, dextrins, celluloses, gums and the like, from simpler forms and to form carbohydrates from proteins and from the glycerin in fats. It is therefore clear that the main source of the energy in carbohydrates comes from the sun's energy and from plant life.

The functions of carbohydrates in nature are many. In the animal kingdom, dextrose and glycogen constitute the main sources of mechanical and heat energy. In plants the dextrose (grape sugar), saccharose (cane sugar) and starch likewise serve as sources of energy for future use or for conversion into other forms of carbohydrate, such as the celluloses and pectins. The celluloses serve in the main as supporting elements in the architecture of the plant. Other complex derivatives of carbohydrates, such as mucins, chitins, cerebrosides and glucosides, serve in various specific capacities in animal and plant tissues. Thus the mucins act in part as lubricants, the chitins make up part of the protective shells of beetles, lobsters and crabs, the cerebrosides occur quite specifically in nerve tissue, and the glucosides are widely distributed in numerous specific combinations in plants and in animal tissues.

Grape sugar, or dextrose, is widely distributed in the plant and animal kingdoms. Its impor-

tance as an article of commerce is due largely to the ease with which it is prepared from starch. The starch is boiled with dilute sulphuric acid; the acid is then neutralized and removed by the addition of lime, and the resulting solution is evaporated to a syrup under diminished pressure. The solution thus marketed contains dextrose as the main constituent, admixed with varying amounts of other sugars and derivatives thereof.

Levulose, d-fructose or fruit sugar, occurs in nature to a much more limited degree, being present mainly in fruits and honey. Like dextrose, it must be prepared from other sugars, such as inulin or cane sugar. It is sweeter than dextrose, but its use in place of cane sugar is limited, partly because of the difficulties involved in its preparation.

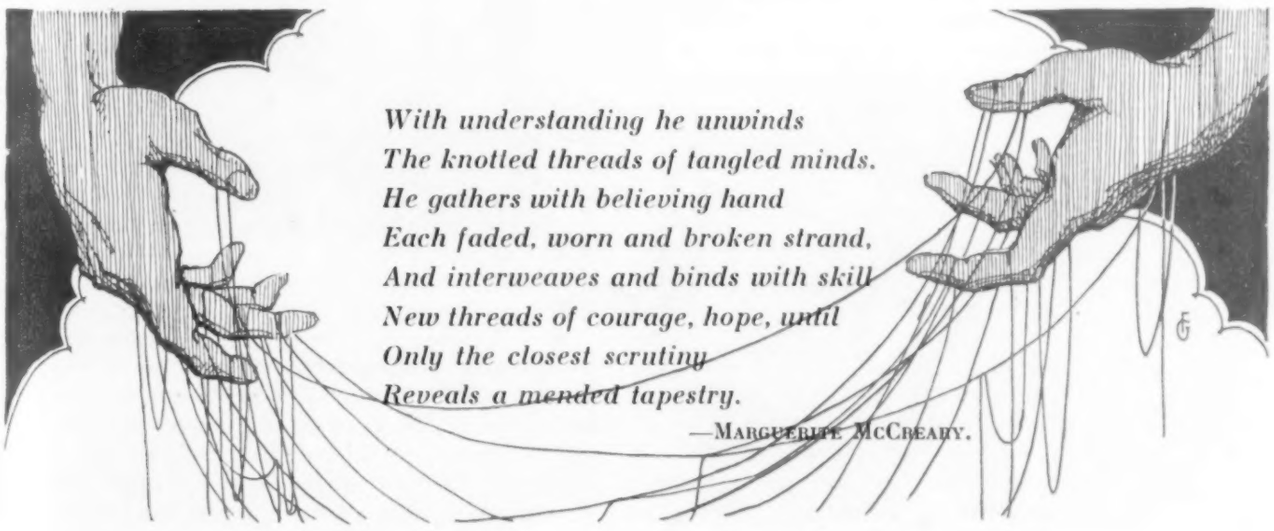
Cane sugar and beet sugar, which are known as saccharose or sucrose, are the most important sweetening agents and stand next to starch in importance as carbohydrate foods. The two main sources of saccharose are sugar cane (Saccharum officinarum) and sugar beet (a cultivated variety of Beta maritima). The amount of sugar present in both good cane and sugar beet is between 12 and 13 per cent. The preparation of the sugar from these two sources is a highly technical matter which requires the most careful chemical control for production on an economic basis. The process consists essentially in the extraction of the sugar by water, the removal of proteins and other substances from this extract by lime and heat, the removal of the lime by carbon dioxide, the concentration of the purified extract in vacuum pans, the decolorizing by charcoal, the crystallization of the sugar, its separation and often its refining. Cane sugar is easily acted on by weak acid solutions, a factor which must be carefully controlled in the commercial production of granulated sugar.

Another important disaccharide is lactose or milk sugar. This is prepared by evaporating the sweet whey obtained after removing the curd in cheese or casein manufacture until, on cooling, the crystalline lactose separates. This sugar is not used as a food but largely as a diluent in medicinal products or as a carbohydrate food in infant diet.

Although the starch found in seeds and plants yields dextrose as the final product of hydrolysis, with dextrins and maltose as intermediate products, each plant appears to store starch as granules of rather specific microscopic appearance. The granules consist mainly of pure starch, but the protective coating of the granules appears to contain small amounts of amylopectin, phosphorus and fatty acids. Pure starch is converted from the insoluble into the soluble form by heating it at high temperatures. If heated with water at a high temperature for a longer time, it is converted into dextrins and very slowly into maltose and dextrose. However, if boiled with dilute acids or if incubated with the enzymes amylase and maltase, starch is rapidly converted into dextrose.

Glycogen or animal starch is similar to starch in its chemical characteristics. It is the storage form of carbohydrates in animals. It is found mainly in the liver and in muscle tissue.

The Neurologist



With understanding he unwinds
The knotted threads of tangled minds.
He gathers with believing hand
Each faded, worn and broken strand,
And interweaves and binds with skill
New threads of courage, hope, until
Only the closest scrutiny
Reveals a mended tapestry.

—MARGUERITE MCCREARY.

Ewing Galloway

A most natural baby carriage.

THE DOUBLE-DECKER BUGGY shown in the circle illustrates perambulating à la Peking.

Ewing Galloway

Ewing Galloway

The smiling Eskimo baby feels quite at home in his customary position on mother's back.

Just Perambulating

For a few pennies and with two boys thrown in for good balance, this hired Chinese nurse-maid perambulates with the young children to earn his living and relieves the mothers of the care of their progeny.

Herbert Photo

Ewing Galloway

A young son of Serbia is shown being "toted" in true native style and seemingly not minding at all this means of conveyance.

The Plumber's Contribution to Health

By

JOHN P. KOEHLER

FEW, if any, trades or professions have contributed more to the convenience, comfort and health of society than have sanitary engineering and plumbing. In spite of the plumber's contribution to our happiness and welfare, he is today perhaps the least appreciated and the most maligned of all workmen. No matter where the plumber appears, whether it is in a story, in a book, on the stage or in a moving picture, he is always portrayed as a person that forgets his tools but never his prices. Perhaps the plumbers themselves are to blame for this unfavorable impression of their trade by not having made much of an effort to popularize their business. Perhaps a Plumber's Day or "say it with plumbing" advertisements on other special days would make us all think more of what the plumber has done for us instead of suspecting that he "has done" us.

Sanitary engineers who construct municipal water and sewage disposal systems are recognized as our great benefactors, honored and paid accordingly, and yet of what value would municipal water and sewage systems be to any community without the installation of safe and sanitary plumbing systems in the home? The plumber, like many other worthy individuals, is seldom given full credit for his good work in the community, because life too many times is like a football game—the applause and credit are given only to the players that carry the ball and make the touchdowns. The plumber might be compared to the linemen who make it possible for the backfield men to carry the ball and, although indispensable, are accorded little credit by the spectators, who usually watch only the ball carriers.

When the sanitary engineers, the members of the medical profession and the public health officials make touchdowns in the field of public health, the fact should not be overlooked that the much abused and unpretentious plumber made many of these touchdowns possible. If the history of public health and sanitation is carefully studied, it is apparent that there has always been a close relationship between sanitation and health.

Whenever communities, nations or eras have emphasized the importance of cleanliness and sanitation, there has always been, without any exception, an improvement in personal and public health. During the middle ages, when people appeared to be more interested in their souls than in their bodies and when the body was not a thing to safeguard and develop but rather something to be subjugated and controlled, history reports the most devastating epidemics of contagious disease. It is estimated that the bubonic plague alone took a toll of 25 million people in Europe during the fourteenth century. Two thirds of the students of Oxford and between one fourth and one half of the population of England died. In the seventeenth century, in many of the larger cities of Europe there was not one domestic sewage vault, and violent opposition was aroused when some of the rulers ordered householders to build such sanitary necessities. Since babies and children are most sensitive to insanitary conditions, it

can readily be understood why 688 children out of every 1,000 born in some of the European countries during the eighteenth century died before the age of 10 years.

The mortality in towns and cities in which poor sanitary conditions existed up to the beginning of the eighteenth century exceeded the birth rate, and the city population would have steadily dwindled had it not been for the continuous influx from the rural districts. What city life was even as late as 1865 can be readily visualized by reading an interesting account of New York's sanitary conditions which a sanitary inspector gives as follows: "Domestic garbage and filth of every kind is thrown into the streets covering their surface, filling the gutter, obstructing the culverts, and sending forth perennial emanations." Even as late as 1900, in many communities the duties of health officers as laid down by law were "to remove all filth of any kind whatever which shall be found in any of the streets, lanes, wharves, docks, or any other places whatever within the limits of the town to which such committee or health officer belongs, whenever such filth shall in their judgment endanger the lives or health of the inhabitants thereof."

No matter where or at what period one studies the development and improvement of public health, the sanitary engineer and his team mate, the plumber, are always found on the field of battle. Through the installation of modern municipal as well as domestic water and sewerage systems, cities have been able not only greatly to reduce their morbidity and mortality rates, but in many instances to reduce them below those of rural communities. Typhus fever need no longer be feared in the modern city, but owing to the absence of modern plumbing it is still quite prevalent in rural communities.

The gradual decrease in the infant mortality rate as well as the great reduction in the tuberculosis case and death rates are due at least to some extent to better housing conditions, in which modern sanitary plumbing plays a large part. In fact, a great deal of all improvement made in the health of the people of today has been made possible through a more sanitary environment. To appreciate more fully what modern plumbing has done to make our environment not only more healthful but also more comfortable, one need merely stop in a small-town hotel or live in a rural community. The possibility of having plenty of both hot and cold running water at all times is appreciated only when one has to postpone his bath and other sanitary measures until many necessary preliminary arrangements have been completed.

There are still many homes without bathtubs or shower baths in the city as well as in the country. Saturday afternoon and evening and the ordinary wash-tub in the shed or basement still furnish the time and place for baths in many homes. Individuals who are not bow-legged or acrobatic enough to curl up in a tub must be satisfied with a superficial sponge bath. When there are large families and when it means a great deal of extra work to prepare the necessary water for many bathers, it is not uncommon for the more unselfish members of the family to postpone their baths until a more opportune time. Many times this postponement means that there will not be any baths for certain members of the family until the water in the old swimming hole is warm enough for even the most particular.

Since cleanliness has always been considered akin to godliness and since it is known that uncleanliness is responsible for disease, it is difficult to understand why bathtubs should any longer be considered a luxury. There was a time when people were afraid to take baths except during the warm summer months. There are instances reported in which individuals claimed to have become ill because they took their baths too early in the spring. There is a case on record in which a man refused to pay for the installation of a bathtub because it had not been completed until late in the fall, the end of the bathing season. The time has passed when people may be excused for not keeping clean because the bathing facilities in the home are inadequate and the creek is frozen over.

Cleanliness is to the body what oil is to the machine. It keeps it from rusting. The best kept machines last the longest. Bathing is necessary for cleanliness. The hands, face and finger nails should be kept clean, especially before meals. Any cut or abrasion of the skin may allow bacteria to enter when the spot is dirty or is touched by dirty hands. The need of cleanliness is particularly great for those who work on farms, in factories and other places in which dirt is liable to be carried to the mouth by the hands. A large majority of the infections get a foothold in this way.

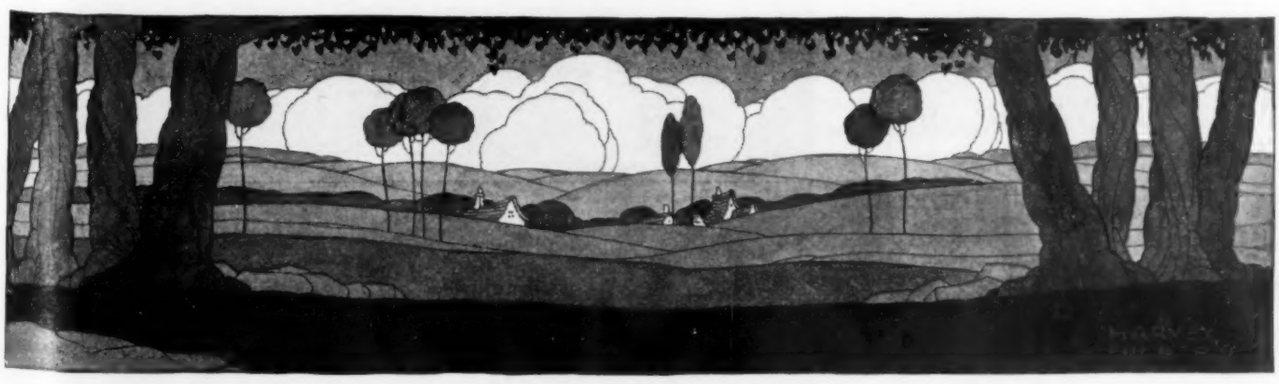
The skin is not merely a covering and protection for the body against infection, but it is also an important part of the heat-regulating machinery of the body, and it is quite important as an organ of secretion and excretion of waste products. Its main function, however, is to regulate the heat of the body. A clean skin is able to regulate the body heat more efficiently than one whose pores are clogged with hardened secretions and whose surface is insulated with layers of foreign matter. A bath a day keeps the body odor away.

There should be adequate bathing facilities and conveniently located facilities for the washing of hands, both in homes and in places of employment. Just as every community that desires hygiene and sanitation must spend a great deal of money for equipment and its maintenance to obtain desirable results, likewise every home owner, employer and manager of public buildings must be willing to spend enough money to make available adequate plumbing equipment for individual needs. Modern plumbing has made it possible for every place of human habitation in civilized communities to have adequate facilities for the maintenance of cleanliness and health. The teaching of cleanliness and health habits in homes and schools will never accomplish a great deal unless adequate facilities are available to encourage cleanliness and other habits related to health. Whenever lavatory and bathroom facilities are so inadequate as to make them unavailable to members of a family, to pupils in a school or to employees at their place of employment at a time when they are most needed, the choice lies between enlarging the facilities or jeopardizing the health of those who are compelled to wait until the limited facilities are not in use.

Every modern place of habitation, whether it is the home, office, store, factory, school or other public place, should have sufficient sanitary and plumbing equipment installed to make it possible for all to keep clean. Lavatories and bathrooms should no longer be considered luxuries and, as such, limited to an absolute minimum. They have proved themselves to be health necessities and should be made available at all times. When one stops to compare the cost of modern plumbing fixtures, including installation and maintenance, with that of other equipment, one cannot help but admit that the plumber has made it possible for us to have the necessities for cleanliness and health at a much lower cost than we are paying at the present time for some of our many luxuries.

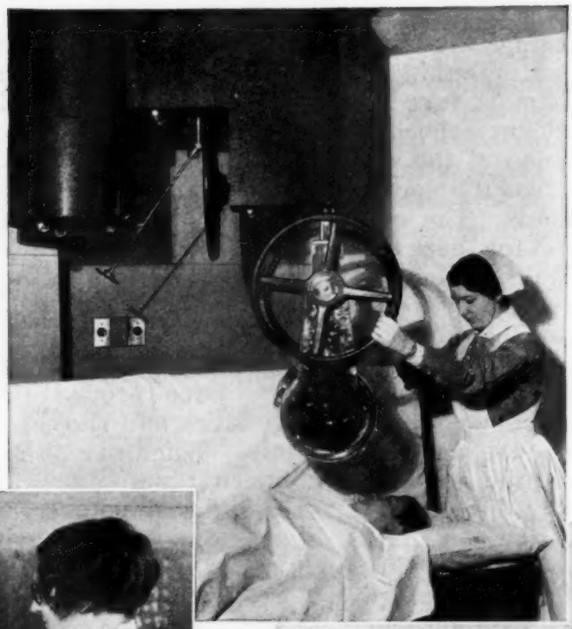
The family plumber, like the family physician, has not always been given due credit for his contribution to family as well as to community health, because so much false propaganda pertaining to his services and charges has been disseminated. While there are, no doubt, some plumbers, as there are men in all walks of life, who are not worthy of their hire, yet to be fair one must admit that few plumbers indeed make more than merely an ordinary livelihood.

One of the most common faults of the human being is that he takes too much for granted. Man is inclined to expect the most from those who give him the best service. The fact that it is only rarely that leaks occur in homes from defective plumbing makes him forget the important part that modern plumbing plays in daily life. If the science of plumbing had not been perfected and one was compelled to call the plumber more frequently to keep from being flooded or gassed, undoubtedly there would be more appreciation of the plumbers' contribution toward health and welfare.



RADIUM BOMB

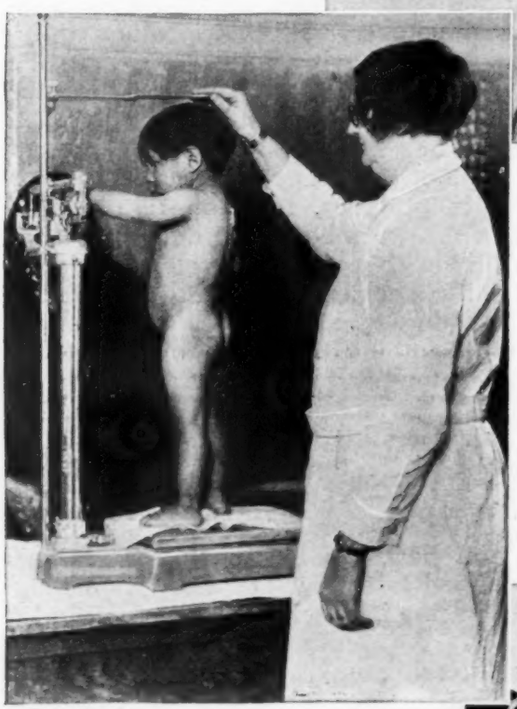
A teaspoonful of radium (4 grams) worth $200,000 was received at Michael Reese Hospital for use in the treatment of cancer. The machine in which this potent metal is used is called the radium bomb.



Underwood and Underwood

GRAIN BINS

The queer tree-shaped devices pictured below are grain bins. The natives of Angola, Portuguese West Africa, put the bundles high on posts to protect the grain from vermin and live stock.



Fotograms

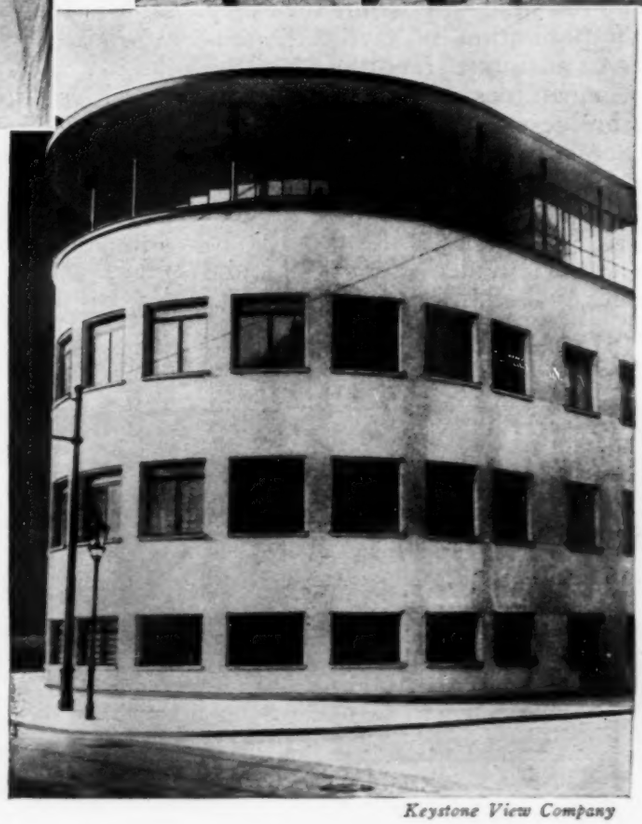
Ewing Galloway

PERFECTION

This health-inquisitive Indian baby has been proclaimed the most perfect child on the Glacier National Park Reservation.

ROOF GYMNASIUM

Gymnastics can be practiced in the open air on the roof of this new German hospital structure. The building is provided also with a glass-enclosed pavilion for use as a gymnasium when the weather is inclement.



Keystone View Company

OH, DOCTOR!

The phenomenal creature to the right is none other than a doctor, supposedly protecting himself from the ravages of the London plague in 1665 as he visits his patients. More than 68,000 persons died as the plague swept London.

Herbert Photo

IN PREVENTION

Contrast modern treatment for diphtheria. Two babies are pictured below in the act of receiving an immunization treatment to prevent illness and possible death from this contagious disease.

Acme

Herbert Photo

STREET CLOSED

Traffic consists of bicycles and scooters on this Parisian street which has been blocked off to allow the locomotive capabilities of children to develop unharmed.

Ewing Galloway

A "KIDDY" CART?

The young father shown to the left is taking his baby to the clinic and the goat to market. It looks like a day for the "kids" in the Virgin Islands.

Cross-Sections

of

Eskimo Life

An Article in Which Hygiene Enters the Alaskan Community and the Igloo

I STOOD on the shore of the Arctic ocean one September evening watching the oomiaks, their translucent golden sides low in the water with their weight of full sacks, returning from the coal mine 12 miles inland. Snowflakes were sifting slowly from a leaden sky, and there was not a breath of air to fill the limp triangular sails. Sled dogs, three lean malamutes to the boat, plodded along the beach drawing the oomiaks by sealskin lines attached to the masts. One of the boats, that of Tingook of Icy Cape, beached directly at my feet. Tingook was stopping temporarily in our village to mine the easily gathered coal which we used as fuel and for which we paid in government barter supplies—flour, sugar, coal oil, ammunition and calico. His wife scrambled from the boat and slumped on a sack of coal which he had flung out on the frozen sand. She was a frail little woman, far gone with tuberculosis, and as she bent double in a paroxysm of coughing I noticed a lump inside her parka.

"Whose baby?" I asked, for I knew that their youngest was a child of 4.

"Baby me," she beamed. And her husband, stepping forward, proudly explained that the baby had been born the previous day on the shore of the inlet. They had simply beached the boat and tipped it over, and she had crept beneath it on a heap of reindeer skins and sacks. The coarse brown twine with which the coal sacks were sewn had tied off the umbilical cord.

Tag-a-rook, chief herder of the Nekluk reindeer herd, appeared at our door one evening asking for medicine for his apprentice, Jack Anakak. Jack, it seemed, had cut his thumb some time before, and it had subsequently been frozen. Now it was so painful he could not sleep. We sent Tag-a-rook back to camp, an eight-hour journey by sled deer, to bring Jack in for medical care. He arrived burning with fever, moaning with every breath, Ah-dree! (It hurts!) and displaying his hand and arm angry and swollen.

A strange native presented himself in our kitchen one morning, seeking medicine for his sick wife. "Him pain inside," he earnestly explained, vaguely indicating the region of his abdomen. "Him plenty sick now." The man had come by dog team from Point Lay, three days' journey to the south, and would start back on the morrow, hoping to carry with him some pill potent to cure the suffering woman.

A rap came at the door of our living-quarters one March evening. Opening the hall door I found Too-look, clad in tattered squirrel-skin parka, commodiously fashioned to accommodate inside it the inevitable baby who slumped forever at the base of the mother's spine, asleep, or peered from the hood at the back of her neck. With her was one of our school boys, a round-faced, rosy-cheeked lad. Too-look spoke to the boy in a low plaintive monotone and, turning to me, the boy interpreted: "This woman he

say one of his dogs is dead by lean. Did it will be all right if he making soup from it for his children. They crying all the time for eating something."

It is situations such as these that the worker among the Eskimos of northern Alaska is continually called on to face. Our ideas concerning health education had been definite the August day that the revenue cutter "Bear" landed us on the frozen tundra of arctic Alaska, 100 miles from our nearest white neighbors at Barrow. As teachers for the United States Bureau of Education, my husband and I knew just what health habits we wanted to build up, what principles of sanitation and hygiene we hoped to establish, what ideals of right living and good sportsmanship we hoped to inculcate among our native charges along with a working knowledge of the three R's. But each day brought a keener realization of the magnitude of the task before us.

By
ELIZABETH
CHABOT
FORREST

The first weeks after the opening of school were spent in visiting our people in their homes, in winning their confidence and friendship, in becoming familiar with their customs and the conditions under which they lived. And we found this situation: Clothing consisted chiefly of fur garments, part of them worn with the fur turned in toward the skin, others with the fur side out, many of them never removed until outgrown or outworn. Baths were practically unknown. Body and head lice were prevalent, patiently accepted as one of life's vicissitudes; handkerchiefs were a minus quantity, and, with a population of some 200 persons, there were no toilets in the village with the exception of the ones connected with the government school building which was our home. Washing before meals was unthought of, although a filthy cloth, a Turkish towel by preference, was passed after each meal about the circle seated around the common kettle on the igloo floor, and each member of the circle, well or ill, wiped hands and face on it. Tuberculosis was rampant, each igloo containing at least one victim and several igloos as many as three. And with it all, life was lived light-heartedly from day to day with a blissful disregard for the future. From the eldest grandsire to the youngest baby, the inhabitants slept when sleepy, worked when necessity drove them to it, played when the spirit prompted, gorged when food was plentiful, and fasted when the larder was empty.

Bath day brought broad grins of delight from the occupants of the big wash tub.

Hunters put out in their sealskin boats on the summer sea in the direction of drifting ice fields, to return, perhaps forty-eight hours later, ready to eat and sleep, and with boats laden deep with tons of walrus flesh and hides and ivory. Children played the clock around, then curled like drugged creatures in a corner of the igloo and slept, while the activities of the home went on around them. Groups gathered through the sunlit nights in the shelter of upturned oomiaks, there to fashion sleds, hew boat ribs and whittle paddles from precious bits of driftwood. At uncertain intervals some woman would issue from a low, rounded tent, bearing a steaming kettle. "Pi-uk-too!" The call would go forth and be echoed through the village. Then every one within earshot would gather around the pan of walrus, whale or seal set out on the tundra; out would come knives from women's parkas and men's belts, and in would go fingers, fishing for choice morsels.

Imagine ringing your bell in the morning and having file into your schoolroom some forty pupils, ranging in age from the 5-year-old kindergartener to the 50-year-old reindeer herder (struggling with the rudiments of writing and arithmetic in order to keep accurate herd records), and then learning on inquiry into the reason for heavy eyes and prodigious yawns that your school had spent the entire night playing football—kicking and chasing a sealskin ball out across the level, snow-cloaked tundra under the brilliant arctic moon. Picture a room packed full of children clad in garments of sealskin, muskrat and reindeer, and try to imagine the blend of odors permeating the atmosphere—seal oil, rancid fur and perspiring, unwashed bodies. Conceive of your consternation at having certain of your kindergarteners hurry outside at recess time to where, on the front steps, their mothers patiently waited to provide them with the nourishment Nature had furnished for them.

Our first attempt to bring order out of this chaos was to insist on a reasonable retiring hour for the school children. Their parents were cheerfully willing to cooperate with us, but "We have no clocks" was the smiling alibi. We solved that problem by ringing a curfew bell at 9 o'clock each night, then making the rounds

of the village, often in a driving blizzard, to make sure that every pupil had retired to his heap of deer skins in the corner of the igloo and was attempting to sleep despite the chatter of his elders and the dim light of the seal oil lamp. This meant crawling on all fours through the inky blackness of long snow hallways, placing an exploratory hand perhaps on a hairy seal or a heap of frozen fish, or shrinking from the warning growl of a sled dog, butting one's head at intervals against crude driftwood doors or heavy dogskin curtains, oily from years of use, that bisected the passageways. A bell was rung at 8 o'clock each morning, also, to allow each child time to rise and bolt a bit of seal or frozen fish instead of coming breakfastless to school, which, we discovered, was the prevailing practice.

The intense desire in every igloo for a baby frequently finds outlet in adoption.

In young people such as the one pictured below lies the future of the Eskimo race.

The one-piece hooded garment of cloth customarily worn over the fur parka to keep the snow from matting in its hair, was substituted for fur garments in the schoolroom, and a cleanliness campaign was begun. A spirit of competition was aroused among the older girls and boys with the result that in a short time there was keen rivalry among them as to who should have the use of the washing utensils and the schoolroom after school each day. Daily, a boiler of snow occupied the schoolroom heater throughout the day, more snow being added at intervals until, by afternoon, a vesselful of steaming water resulted. Tubs of snow from the 20-foot drift behind the school building were carried in, and a pair of boys or girls attacked their laundry. It was a heartening spectacle to see a 16-year-old boy bent above a wash tub, oily sweat rolling down his round, brown face as he scrubbed away at a "snow shirt" of white canvas stiff with blood and blubber and finally produced a surprisingly clean garment from the suds.

To these young people, water was a precious fluid, as precious as it would be to us if for centuries we had been stooping through long, low passageways, bearing ice and snow to melt in tiny vessels and then carrying the water out again by the same route after every possibility of its further use had been exhausted. This fact was brought home to me most forcibly one day when, returning to the schoolroom laundry, I found that two of the girls, having finished scrubbing their extremely dirty garments, were now shampooing their long, black hair in the same water.

The first bath day, one Friday after school, was a discouraging affair. In large galvanized wash tubs set near the schoolroom heater, I scrubbed the grinning little boys and girls until their brown bodies glistened—then had to watch them wriggle back into noisome fur garments worn continuously for months. This state of affairs was remedied as speedily as possible by making at school outing-flannel undergarments for each child, so that on subsequent bath days they had at least one clean garment to put on next the skin. The older girls in sewing class also made shirts for the boys for schoolroom wear and dresses and undergarments for themselves.

Once each week the children gathered in our living quarters for an evening of games and refreshments, and I am convinced that no innovation brought quicker or more gratifying results in every respect. No pupil, child or adult, was permitted to enter this gathering unless he arrived with clean hands and face, clean garments and hair that was free from reindeer hair and lint and was neatly combed. Flinch, parchesa and especially pit proved popular with the older ones; but at first, strange outcries would rise from the circles of players seated, native-fashion, on the floors of our living quarters. "That boy look my cards." "You lie! I did not look your cards." "This girl cheat." It was necessary to start at the very bottom to build up not only ideals of sportsmanship in playing games but also the right vocabulary.

Each health problem had to be weighed and decided in the light of its specific setting. For example there were the tuberculous pupils. Offhand one would say, "Bar consumptives from the school." However, we did no such thing. In a community where, at mealtime, all the inmates of an igloo dip their fingers in a common stew; where one drinking cup suffices for the needs of all; where the only ventilation is through a 2-inch pipe thrust through the roof,

its opening stuffed with rags to keep out snow whenever a blizzard rages; where, in order to visit and condole, the entire village crowds into a home in which there is sickness, we could see no advantage to any one but ourselves in barring tuberculous pupils from the schoolroom. Each cougher, therefore, was furnished with a sputum cup containing disinfectant and was allowed to remain in the well lit, well ventilated school amid cheerful surroundings as long as possible. Devoted fathers dragged sons and daughters, too weak to walk, to school each day on sleds, the same method of transportation as that used by our most zealous pupil, a man in the late forties, paralyzed from the waist down; he was drawn into the schoolroom on a sled every day of our three years at Wainwright and lifted into his seat by the older boys.

As with tuberculosis, so with other diseases and ills. We handled each health problem in or through the school. But although our health education began in the schoolroom it did not end there. Working cautiously so as not to rouse antagonism, we endeavored from the day of our arrival to win the sympathetic understanding and cooperation of the village elders. Through both public and private talks, continual visits to the homes, first aid classes among the young people, mothers' classes and the village council, we spread the doctrine of fresh air, cleanliness, regular habits and sanitation. After we had won their confidence, the village council, elected by popular ballot and composed of the seven most influential patriarchs of the village, gave us invaluable aid in our work and relieved us of many unpleasant duties.

There was the instance of Jim Pap-ig-look. Jim's wife had died in March, leaving him alone with three small motherless children. As was customary, the rough box containing her body was drawn out onto the tundra back of the village and there walled up securely in a little house of snow blocks, awaiting the spring sunshine to lighten the labor of digging a grave in the frozen tundra. Jim departed for Point Barrow in search of a new mother for his children, lingered there unduly, and was caught and detained by the spring thaw.

One Sunday, near the close of our usual religious meeting in the schoolroom, old Adam, one of the most venerable of the elders, rose and harangued the gathering, gesticulating, and pointing repeatedly to his nostrils. Through a school boy interpreter we learned that the time for the burial of Jim's deceased wife had already been postponed overlong. Adam was instructing the congregation to secure spades immediately at the close of the services and repair to the burying ground. A piece of whale blubber inserted in either nostril, he had informed them, would make the task less irksome.

The food question was a troublesome one. Nature originally was kind to the Eskimo, furnishing him with a diet of raw meat, liver, frozen fish—foods rich in vitamins. But with the advent of the white man came shortage of game and substitution of civilized foods with their attendant ills.

For the Eskimo, as long as the flour supply holds out, the "muk-pow-rah," a species of pale sodden doughnut fried in seal oil, is one of the chief articles of diet in every igloo, and to these indigestible objects we laid most of the intestinal disorders prevalent among Eskimos of all ages. To counteract the evils of the muk-pow-rah, a campaign of bread baking was inaugurated, and since the village contained few stoves suitable for that purpose, the commonest igloo stove being constructed from a 5-gallon coal oil tin and designed to burn chiefly blubber and sod for warmth, this baking took place in my kitchen where each day two pairs of girls mixed and baked yeast bread to the intense delight of their respective families. Cooking classes, also, were held in my kitchen, and the women of the village were taught the proper method of cooking rice, beans and such other common staples as they regularly secured from transient traders and from our government barter supplies. We experimented, too, in the preparation of dishes for the sick—broth of ptarmigan and reindeer, and custards of wild eggs, chiefly from the eider duck which makes its nest about the shallow ponds on the summer tundra.

One of my most bitter battles was waged against the adoption of new-born babies, with their subsequent removal from their mothers' breasts to a precarious existence on uncontrolled milk supplies. There are many sterile women among the Alaskan Eskimos, and the intense desire in every igloo for a baby finds outlet in the adoption of one from a more fortunate friend or sister. I have known a woman to acquire possession of a tiny baby and set out with it for her winter home three days distant from the village, taking with her two or three cans of the highly sweetened milk that is not harmed by freezing. When this supply was exhausted, it was eked out by mixtures of raw flour and water (which satisfied the new mother because of its resemblance to diluted milk), seal oil, and meat and fish soups. One woman who had never given birth to a baby nursed her adopted baby at her breast.

In the village, cleanliness campaigns were inaugurated. Each school girl was held responsible for the scrubbing of her igloo floor at least once each week with the exception, of course, of the coldest season of the winter when washing it would simply have resulted in coating the floor with ice; bedding and robes were hung in a 40-below-zero wind to whip clean and rid them of unwelcome occupants. When June with its twenty-four hour day of sunlight had erased all but a few tenacious snow drifts from the village, a spring clean-up was instituted.

Among the Eskimos there is no such thing as waste in our meaning of the word. The intestines of whale and duck form a portion of the general mulligan, while those of seal and oogrook go to the making of rainproof garments and translucent windows for tent and igloo. The partially digested moss in the reindeer's stomach is pronounced "very fine chewing," and the clams from the entrails of the walrus are a rare delicacy. Yet in spite of this diet and the fact that the lean sled dogs subsist chiefly on what little is discarded from slaughtered animals, the spring thaw disclosed a revolting condition of water holes and grounds throughout the village. Each householder then was held responsible for the neatness of the bit of tundra adjacent to his igloo, and a fine was levied, payable in sacks of coal from the nearby mine, if the condition of his grounds on a certain date was not satisfactory to the village council; this plan was instigated by the teacher.

Unthinking persons sometimes cast aspersions on the ability of the government teachers to carry on the medical work among the natives and on the wisdom of permitting it. In those remote sections of Alaska where there is no one of the medical profession within hundreds of miles, it is simply a question of common humanity and of superior intelligence taking charge for the avoidance and relief of suffering. And in many cases the intelligence with which one has to cope is of a pitifully low order. There was, for example, the case which came under my observation, of an Eskimo mother who rubbed the abdomen of a colicky baby with coal oil and then swathed the infant in woolen blankets. When the child was finally brought to the village nurse for relief, he was so horribly and deeply burned that the flesh was falling away and it was impossible to save his life.

Health education among the Eskimos seeks not only to avert wanton suffering such as this but, by working through the young people in whom lies the future hope of the Eskimo race, to realize, both in the schoolroom and in the village, that goal set up by Dr. Williams of Columbia University; namely, to have "the individual or group act in situations physically wholesome, mentally stimulating, and satisfying, and socially sound."

X-Rays and Radium — Their Use and Abuse

X-RAY and radium have become almost household words, but some persons think of radium as a mysterious but complete cure for cancer, and others believe that with the x-rays one can look into the interior of the body as at the contents of a glass show case, Dr. Stanley W. Sayer, New York district state health officer, said in a recent radio address.

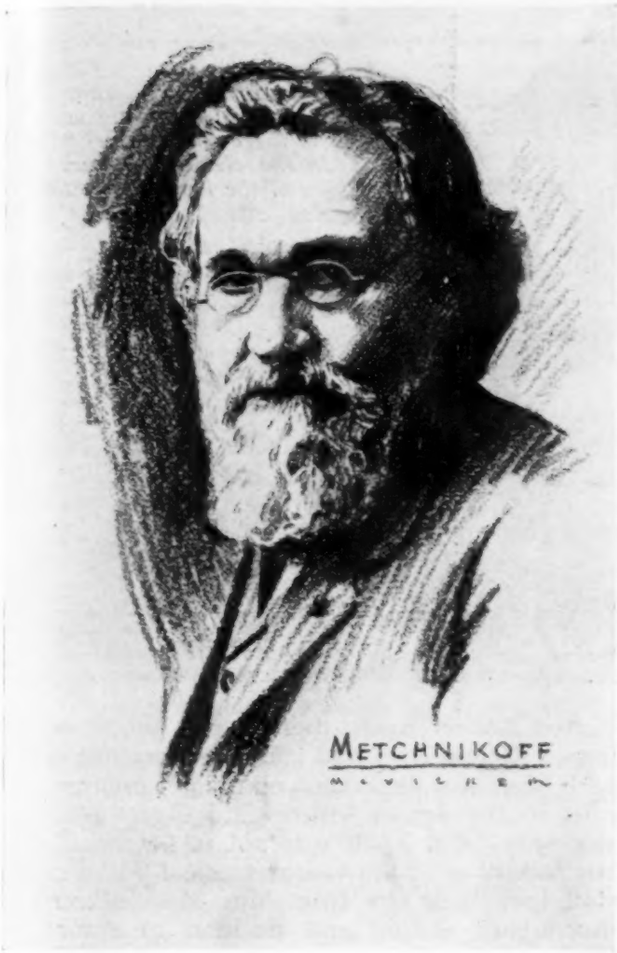
The x-rays do not light up the inside of an object so that it can be viewed from the outside; the rays merely pass through, and the ease with which they penetrate a substance depends largely on its atomic structure. If a hand is the object, the rays pass through the flesh easily, through the bones less easily and with still greater difficulty through a ring. When the film is developed, it will be dark outside the borders of the hand. The flesh, offering some resistance to the rays, will show up lighter, the bones still lighter, and the ring nearly white, not enough of the x-rays having passed from the tube through the ring to make any change in the silver on the film.

The fluoroscope, a part of the apparatus used by the x-ray specialist, enables him to see the shadow instead of taking a picture of it. There are certain substances, opaque to the x-rays, that can be swallowed in solution. A solution may be injected into the upper urinary tract or into the bronchial tubes that will throw a shadow of these parts.

From the early use of the x-rays in locating bullets and broken bones, their value for the finding of many other body ailments has grown immensely. In addition, the rays have curative value but are dangerous in unskilled hands, for prolonged exposure may cause burns which heal only with the greatest difficulty. Because of their effect on living cells, they have been used with success in the treatment of obstinate skin diseases and of cancer, and they are especially efficacious when the disease is on the body surface.

Radium is an element discovered by Madame Curie, a Polish chemist; it has the property of giving off certain rays, some of which are apparently the equivalent of x-rays. Radium is applied more easily, in many instances when the x-rays cannot be used at all. Radium is not a cure-all for cancer but when properly administered will sometimes alleviate and cure. Sometimes it is used in the removal of nonmalignant growths.

Only a small amount of pure radium has been isolated, and the cost is great. Unfortunately, charlatans frequently proffer a complete x-ray examination for a dollar, offer radium water at $5 a case, and make other unreasonable claims. They are merely looking for money, for they cannot interpret the x-ray pictures which they may take; when it comes to reading the film or fluoroscope they are at sea. Their radium water in most instances is as strong as tap water. Let your doctor decide when you need x-ray treatment or examination and where you should go in order to procure the best results.



Pioneers of Medicine

Ilya Metchnikoff

By

Claude Lillingston

"In times of famine, the natives of Tierra del Fuego kill and eat the old women rather than destroy their dogs. When they were asked why they did this, they said that dogs could catch seals, whilst old women could not do so."

—ILYA METCHNIKOFF.

LUNATICS and great discoverers have this in common—they indulge in the wildest and most fantastic dreams. The lunatic, as we know from observing others and ourselves, gets no further. Great discoverers do. Their success is often due in part to a vivid imagination and a flight of fancy seldom met outside the realm of fairy tales.

A generation or two ago we accepted as axiomatic the inability of man to increase his height by one cubit or prolong his age beyond three score years and ten. If he were foolish or rash enough to do so, he was punished by the "labour and sorrow" allotted him by the Psalmist.

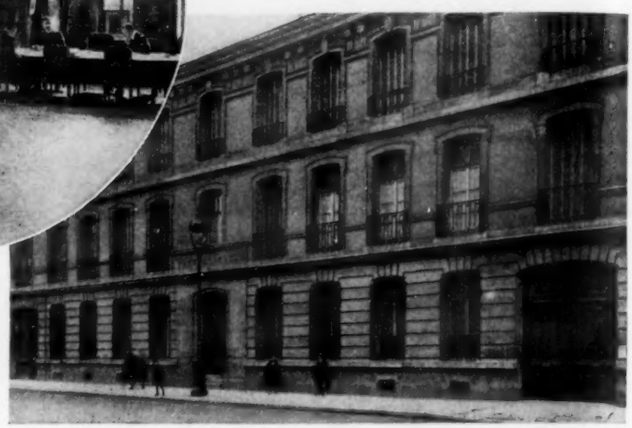
In the face of this verdict, accepted without challenge for centuries, Metchnikoff had the temerity to ask: "Why do we grow old? Need we grow old?" Here was a sober scientist, with a hard earned and well earned international reputation to lose, asking questions hitherto raised only by children and lunatics in modern times and by the romancing philosophers and fairy-tale-tellers of bygone ages. Metchnikoff died before he had found complete answers to all his questions. But he had succeeded in throwing valuable light on the problem of decay and death. What was perhaps even more important, he had put research in this field on a scientific instead of on a speculative basis; and the latter, when one comes to think of it, is no basis at all.

The theory of old age on which Metchnikoff worked for many years depended on the assumption that the ravages of old age are the ravages of certain minute cells. Invading and destroying the higher elements of the body, these cells pave the way to a gradual deterioration of the tissues, ending in death. Metchnikoff hoped that, by letting loose in the body other microscopic cells or bacilli, which would attack and kill these agents of senile decay, life might be almost indefinitely prolonged.

Metchnikoff was born in a village in Kharkoff in Russia, May 16, 1845. His father was an officer of the Imperial Guard and his mother was a gifted Jewess from whom he doubtless inherited his musical talents. Even in his early childhood he showed a passion for scientific research and teaching. When only 8 years old, he was already familiar with the flora in his home district and was a most promising botanist. As for his gifts of teaching at this early age, they were such that he had to pay his playmates to listen to him! Evidently there are drawbacks to being the playmate of a budding genius.

After studying at the University of Kharkoff, Metchnikoff traveled abroad, working on marine biology in Heligoland, and on zoology in Giessen, Göttingen, Munich and Naples. In 1876, he returned to his native country and taught

zoology, first in Odessa and later in St. Petersburg. In 1870, he was appointed professor of zoology and comparative anatomy in Odessa. His first wife, who was already so much of an invalid when they married that she could not walk to church, died in 1873. In order to give her the comforts an invalid requires, Metchnikoff supplemented his meager income by translation work over which he strained his eyes badly, as he struggled through the night hours, using atropine to better his vision.



In the Pasteur Institute, shown below, Metchnikoff lived and worked, and it is there that his ashes now rest. In the circle is pictured the library of the Pasteur Institute.

Russia in those days was not a healthy country for a man with such a liberal outlook on life as Metchnikoff had developed. His students at Odessa loved him, and he did his best to divert their attention from political controversies to their studies. But even this negative attitude toward politics was not enough for the authorities, who regarded him more and more sourly. The assassination of the czar in 1881 fed the flame of reaction and encouraged the appointment at the university in Odessa of teachers whose qualifications were political rather than scientific. Here was an atmosphere which was growing more and more uncongenial, and only a comparatively slight crisis in the university world sufficed to make the cup brim over.

Meanwhile, Metchnikoff's work had been attracting attention outside Russia, and Pasteur, whose genius included the ability to detect genius in others, was one of the first to discover Metchnikoff's gifts. At their first interview, in 1887, when Metchnikoff had traveled to Paris in search of congenial surroundings in which to work, he found Pasteur already an old man, half paralyzed, with "piercing grey eyes, a short beard and moustache, hair turning gray, covered by a black cap, looking pale, tired and ill, and evidently not having long to live." The welcome which this tired old man gave to the Russian exile was both warm and spontaneous. Pasteur invited him to his home, introducing him to his family and collaborators, who joined with their chief in the warmth of their welcome. Pasteur was convinced that Metchnikoff's revolutionary theories were sound, and when the latter timidly asked if he might join Pasteur's staff as a volunteer, Pasteur offered him a whole laboratory.

Charmed though he was by this invitation, Metchnikoff felt it his duty not to accept it finally until he had explored other openings. He proceeded, accordingly, to Berlin where he visited Robert Koch, then at the height of his fame. Metchnikoff had taken microscopic slides with him, and these showed his pet microscopic cells in the act of killing and digesting other elements. But Koch was not to be impressed. His reception of the visitor was cold, and as his staff took their cue from him, Metchnikoff felt thoroughly chilled and decided to return to Paris.

In Paris he remained for the rest of his life. His attachment to Pasteur and his staff began as a scientific sympathy and developed into a warm personal friendship. As Metchnikoff's fame grew, tempting offers were made to him by other centers of learning and research. But his reply was always, "I do not leave the Pasteur Institute until my body goes to the cemetery in Parnasse." Even this last parting was not to take place, for the Pasteur Institute was as devoted to him as he was to it, and his ashes now rest in an urn in the institute. Metchnikoff was the subdirector of the institute for many years before his death.

Before Metchnikoff came on the scene and peopled it with phagocytes—white cells of the blood waging active warfare on invading germs—the stage was practically empty. Or rather, the curtain was down, and no one saw what was going on behind it. Great stage manager that he was, Metchnikoff pulled the curtain aside and threw a flood of varied lights on the combatants on the real stage of life. Before his advent, medical scientists had been inclined to regard the animal body as something almost as passive as jelly or broth; when germs invaded the body, they were supposed to grow and multiply therein at their own sweet will, until they had exhausted their food supplies or produced substances that checked their further growth.

The assumption that the human body puts up a jelly-like, passive resistance to invading germs did not appeal to Metchnikoff as convincing, and he proceeded to substitute for this nebulous assumption his theory of phagocytosis which, when he first launched it, was generally considered daring to the verge of insanity. He contended that the cells of the body, especially the white cells or the leukocytes of the blood, take an active part in attacking, killing and then digesting invading germs which, having entered the body to eat, find themselves being eaten. A phagocyte, in other words, is a cell which eats cells or germs; phagocytosis is this process of cell-eating or germ-eating. As early as 1883, Metchnikoff gave an address on the subject of phagocytosis in Odessa, but it was not till several years later that his revolutionary ideas on this subject were generally accepted.

While Metchnikoff was developing his theory of the cellular defense of the body against germs, the German school, headed by Ehrlich and others, taught that the defenses of the body against invading germs were to be found mostly in the fluids circulating with the blood in the body. The "cellular" school and the "humoral" or fluid school were at one time critical of and even hostile to each other. The teachings of these two schools have of late been brought into harmony by mutual concessions, and it is significant of the amount of truth which both represented, that when the Nobel Prize in medicine was allotted in 1908, it was shared by Metchnikoff and Ehrlich.

Metchnikoff was first and last a zoologist. Studying cells, from those of the most elementary manifestations of life to those of the more complicated bodies, he found the same laws governing the properties and behavior of all living cells. As he developed his theory of the causation of old age, he became more and more convinced that it was due to a series of cellular reactions. Precocious and unhappy old age he traced to poisoning of the tissues by cells which multiplied in the large intestine, whence the evil spread to the rest of the body. To combat what he called the germs of old age in the large intestine, he lived on sour milk for many years on the assumption that the benevolent germs of such milk would kill those of old age.

In support of this interesting theory, Metchnikoff pointed out that the Bulgarian peasant, who so often reaches a ripe old age, lives on sour milk. Metchnikoff further showed that, by giving sour milk regularly, it is possible to make the germs it contains dominate those which are commonly to be found in the large intestine when other diets are given. The truth of these teachings would be more self evident today had not the public become enamored of them wholesale and run them to death. Various sour milk preparations were employed for every ailment under the sun, and the inevitable failure which often followed did much to obscure the merits of Metchnikoff's teachings.

Among his many gifts was that of a ready pen. His best known scientific works are "The Comparative Pathology of Inflammation," published in 1892, and "Immunity in Infectious Diseases," published in 1901. But the most charming and entertaining of his works is "The Prolongation of Life—Optimistic Studies," published in 1910. In this work, Metchnikoff has discussed the human traits of character inherited from apes, somnambulism and hysteria, the prevalence of pessimism and its relation to health and old age, Goethe and optimism, and the morality which is utilitarian. To this wide range of subjects he has applied a prodigious knowledge always illumined by a lively fantasy and wit. The quotation which heads this paper is taken from "The Prolongation of Life."

When Metchnikoff took up the study of syphilis some thirty years ago, the infecting agent had not yet been discovered, although the infectious nature of this disease was well known. The immunity of the ordinary laboratory animals to the characteristic syphilis of man forced Metchnikoff to experiment on the higher apes, in whom he succeeded in producing the disease artificially with the help of material derived from human beings.

Metchnikoff never lost that capacity for enthusiasm which dies out in most of us in middle age, if not earlier. This infectious quality contributed much to his popularity among his fellow workers. He loved a good joke, and though his own wit was often caustic, it was never intentionally spiteful. His craving to help and teach others, which, as we have seen, developed early in his life, was one of the most dominant of his characteristics.

Metchnikoff used to point out that philosophers such as Plato, poets such as Goethe and Victor Hugo, and artists such as Michelangelo, Titian and Frans Hals produced some of their most important works after they had passed the age of three score years and ten. His friends had hoped that he would belong to this category; it was but seemly that this prophet who had caught visions of a material immortality on earth should himself be a shining example of the man who is old only in years. But as early as 1877, symptoms of heart disease began to appear, and the specialist in Vienna whom he consulted in that year told him not to smoke or to drink wine—an injunction which amused the patient, who had never indulged in either habit. Toward the end, his colleagues persuaded him to move into the Pasteur Institute where they and his wife nursed him devotedly through the last distressing days of his illness. The end came on July 15, 1916, and his last request was respected—that there should be no flowers, no funeral speeches, no show or formality of any kind.

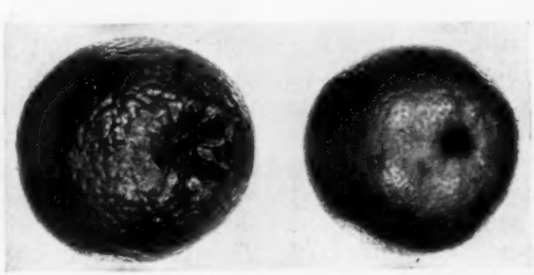
How Science Solves Crime

VI. "Moulage" in Criminal Investigation

By
L. J. KAEMPFER

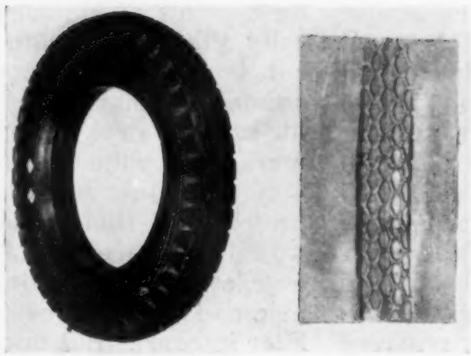
A moulage cast of a Negro (taken from a living subject).

IN PRACTICALLY every field of science it often proves of inestimable value to prepare casts of various objects in order to further certain researches. In medicine these may be employed by dermatologists for the demonstration of various types of lesions in the study of skin diseases. Thus molds may be taken periodically from the same patient, in order to illustrate the progress of a given condition. Orthodontists, plastic surgeons, podiatrists and general surgeons find such reproductions useful in the preparation of reference collections; neurologists, pathologists and others who have occasion to prepare sections of the human brain often employ casts made of this organ in their investigations. Interesting specimens unearthed by explorers, geologists and paleontologists may be reproduced, the copies exhibited and the originals stored away for safe keeping. In criminal investigation and police work, such likenesses are often of great value both in identification and in numerous other instances in which photographs cannot be relied on. It is in the latter field that we are most interested, and some of the numerous ways in which such casts may here be employed to advantage will be discussed later in greater detail. First let us see something of the methods by which casts are prepared.



Moulage copy of an orange (left) and a real orange. (The cast was not made from the orange illustrated.)

According to Hans Gross, whose monumental work on criminal investigation still remains a standard reference volume despite the fact that it is now more than 25 years old, many methods of reproducing objects and impressions have been experimented with from time to time only to be discarded, for the most part, as unsatisfactory. And while his remarks deal almost entirely with methods of making casts of footprints, we may reasonably apply them to the reproduction of other objects as well. Among the various technics which he describes are those of Hodann (equal parts of plaster, cement and sand) and of Hougulin (melted stearic acid, which solidifies in the form of the substance to be copied); Sonnenschein's modification of Hougulin's method, in which the stearine is applied in a powdered state and melted while in place, and a process in which joiners' glue is melted and allowed to cool almost to the point of congealing before it is poured (another of Hougulin's methods). Gross himself found after long experimentation that simple plaster of paris offered the best medium for such work. He strongly condemns mixtures of plaster and cement, stating that plaster always reacts unfavorably on cement. The disadvantages of plaster will be enumerated later.



Automobile tire shown to the left of its imprint reproduced by moulage.

Only a few years subsequent to the publication of Gross' book, a young scientist succeeded in developing a new method for cast making which has entirely revolutionized this field. Born in 1879 in the Riesen mountains of Austria, Alphonse Poller, whose untimely death in 1930 constituted a terrific loss to the world of science, early began to manifest artistic talents. He painted, modeled and experimented with plastic reproductions of objects of various types. Realizing the deficiencies inherent in plaster of paris and other materials then commonly employed, he set about to develop something better; and the "moulage" methods which he has left behind him constitute so great an advance over anything previously perfected that his name is likely to live long in the annals of civilization.

Although moulage is the term which usage has fastened on Dr. Poller's creation, he himself was not in favor of such a designation save for casts of portions of the human body, tinted in their natural colors. For reproductions of all other objects he preferred to describe the negative produced according to his formula as an "abform" (form or mold) and the positive as a "nachbildung" (after-form or secondary form). Later his students developed the practice of designating any casts produced by the Poller method as "pollerplastics," the preparation of the molds as "pollern" (pollerizing or pollering), and the finished product as "gepollert" (pollered). But while these terms are no doubt satisfactory in German-speaking lands, it is a question whether they will ever receive much favor in other countries; so, despite the inventor's hopes to the contrary, it appears that moulage, both as noun and verb, is likely to become the accepted designation.

As opposed to plaster of paris, moulage offers many advantages, as follows:

1. Objects to be reproduced in plaster must be thoroughly greased all over beforehand. This is not necessary in moulage.

2. When making casts from a living model, there is great danger of pulling out body hair. No such danger exists with moulage.

3. A plaster negative is quite rigid; hence it is impossible to produce a cast of an object of a rounded or undercut form without breaking the negative into so-called component casts. Moulage models on the contrary are elastic and hence reproduce objects of the most diverse forms without involving a complicated technic.

4. The preparation of component casts is difficult and requires much experience. They are not necessary in moulage work.

5. The development of a positive from a plaster negative is usually difficult, and, if not skilfully carried out, involves the ready possibility of danger to both negative and positive. This danger does not exist when moulage is employed.

6. Powdered plaster deteriorates on long standing, if it is not kept properly sealed, and loses its binding powers. The materials used in moulage are not subject to such deterioration.

7. Once plaster is made up into a paste, it must be used immediately. The shortest delay results in the necessity for discarding the whole mixture, or the results will be unsatisfactory. This is not so in moulage.

8. The binding power of plaster is variable. Each new lot must be tested, as must also any lot that has long been in storage. These defects do not apply to moulage.

The first general employment of moulage in the United States was undertaken by the Scientific Crime Detection Laboratory of Northwestern University. Through the use of this treatment, it becomes possible to reproduce even the most minute details of the object of which the copy is made, and the latter retains its shape and size for an indefinite period.

In preparing casts by the moulage process, three compositions are employed: first, the "negocoll" or negative material; second, the "hominit" or positive, and last, the "celerit," used for reinforcing purposes. The negocoll is heated in an enameled stew pan over a slow fire or in a double boiler, until it becomes completely melted and is absolutely free from

Moulage specimens of a hand with fingers flexed and extended (from living subjects).

lumps. It then becomes gelatinous and gradually forms a homogeneous, creamlike mass. It may then be applied at once to objects not injured by heat, but for dead or living tissues or any others sensitive to high temperatures, it must be cooled to a point at which it is not injurious to the exhibit to be treated. This composition must be painted on with a brush to form a complete coating which shall be of sufficient thickness not to break easily. After the negative cast so produced has cooled, it is somewhat elastic and can easily be removed from the original to which it adheres.

Our negative mold is now ready, and the next step is to introduce the hominit composition. This is heated, like the negocoll, over a slow flame until it becomes completely liquefied. As soon as it reaches this state, it can be applied to the negocoll cast, this being done either with a brush or with a spray. If the former is employed, the hominit must be painted in, stroke by stroke, so as not to leave any portion of the negative uncovered. Reinforcement, such as cheese cloth, is next added to the layer of hominit which has been painted into the negative cast. The cloth is cut into the required shape and set in place. Another layer of hominit is now added until the reinforcing fabric is completely saturated with this liquid and overlies the coating first applied, without producing any air bubbles. The celerit, or positive reinforcement, is then melted in the same manner as the hominit (they are similar in composition) and is painted over the outermost layer of the latter. When the positive so built up has cooled sufficiently, it can be removed at once from the negocoll negative, and a perfect reproduction of the original object results.

To make this copy even more natural, it may be painted with wash or oil colors, these being applied in a fine coating in order to retain the delicate details of the surface.

Since by the use of moulage it is possible to make reproductions that preserve the most minute characteristics of an object and retain their shape and size perfectly, this process is extremely valuable in criminal investigation. There are frequently found at the scene of a crime many bits of evidence such as foot prints, tire prints, tool marks, teeth prints, wheel tracks and numerous other material clues, all of which are perishable. It may so happen that a burglar during the course of his depredations has invaded the pantry and taken a bite from an apple or other food and thereby left behind a means of identification —his teeth marks. Although the fact is not generally known, the teeth prints of human beings are never identically alike. This truth becomes readily apparent, however, when one considers that no two animate or inanimate objects are ever exactly the same in any given characteristic. Hence the marks left by the teeth of a particular individual may serve just as certain an indication of the presence of that person at a crime scene as would the discovery of his fingerprints. However, evidence consisting of foodstuffs is perishable and cannot be preserved for demonstration later in court. But through the use of moulage, casts of the article in question may be taken while the teeth marks are still fresh and used at any future date to identify the criminal and to prove his presence on the scene. In the same way does this method become of value in preserving foot prints or tire prints.

If a door has been jimmied in the course of breaking into a building, there will remain along its edges markings produced by the tool employed. Casts of these marks may be made and compared with the suspected tool after it is located in order to determine whether or not it was the one used. Later these may be presented as evidence in court to prove the identification of the implement. This greatly simplifies the presentation of such exhibits, since heretofore it was necessary either to saw out the parts involved or to remove the entire door and frame for court demonstration in order to illustrate the conditions existing.

When an unknown body is found, various attempts are made to identify it. Unfortunately the means ordinarily at hand—photographs and fingerprints—often prove inadequate in such cases. When this occurs, a moulage cast of the head may be made, which will constitute an accurate and permanent record by which identification can be established at any future date. This procedure has proved especially valuable in Vienna, for there the law requires burial of unknown dead within three days after the discovery of the body.

Moulages may also be made from a corpse, showing the extent and location of all wounds present. This proves a most valuable and convincing means of substantiating the report of the medical expert and at the same time serves to demonstrate to the court and the jury in a more compelling form than could lengthy descriptions or photographs, the degree of brutality involved in the crime. Dr. Poller's contribution to police science is yet so new and embodies so many hidden possibilities that the next few years are sure to witness tremendous advances in this relatively unexploited field.

"Oh, what a tangled web we weave, when first we practice to deceive," wrote Scott. In the August issue, Leonarde Keeler will discuss the polygraph, one of the various aids to crime detection, by means of which the web is quickly untangled, resolving itself into the thread of fate that leads straight to the criminal.

ILLNESS as TRAINING for ACHIEVEMENT

By

John M. Gibson

ALTHOUGH at least fair health is usually considered necessary for success in almost any field, thousands of men and women have laid the foundations for brilliant achievement in later years while forced to spend weeks and months in bed as a result of illness. The list includes prominent figures in literary and artistic pursuits and also persons in the ordinary walks of life, whose success has brought them only local renown.

Medical experts and others who have studied the reactions of men and women to disease and to other misfortunes are frequently moved to say that many persons have found in prolonged illness and a long period of semiinvalidism the leisure and ability to obtain a good perspective on life and its problems, which they probably would never have had if they had continued in perfect health. This, they say, is often the beginning of conspicuous success. Whether illness is to be the turning point in a person's career or whether it is to be just another excuse for continued failure is largely determined by the individual's point of view and his ambition.

Those who see a close relationship between success and physical illness use as an example Eugene O'Neill, three times winner of the Pulitzer prize in the drama and generally recognized as America's greatest dramatist. O'Neill gives much of the credit for his success to the several months he spent as a patient recovering from a serious illness. Indeed it is said to have been then that he "found himself" and began to think of writing in a serious way. Taking advantage of the enforced leisure that accompanied his invalidism, he began to look at life and people and their problems in a new and more penetrating light. He had done some writing before but had never produced anything worth while of a literary nature before losing his health, although he was 25 years old at the time. The first year after returning to work he wrote eleven one-act plays and two full-length dramas.

"Up to this time," writes J. Arthur Myers, one of the dramatist's biographers, "O'Neill had pursued no definite plan in life, but his stay there completely changed his outlook." The author quotes O'Neill as follows: "Previous to my breakdown I had done quite a lot of newspaper work in New London, which included original poems, parodies, verses, etc. for the editorial page. This experience started me, although the work itself was junk of the low order. But it was at Gaylord that my mind got the chance to establish itself, to establish and evaluate the impressions of many years in which one experience had crowded on another with never a second's reflection. Undoubtedly such inactivity forced me to mental activity, especially as I had always been high-strung and nervous temperamentally."

It will be recalled that Theodore Roosevelt was a sickly child, and it was feared that he would not live to reach maturity. Friends of the late President point out that his sojourn in the West, during which he regained his health completely, laid the foundation for the success he was later to achieve in the field of statesmanship. Indeed, many say that the friendships he formed during this period of his career were largely responsible for his being mentioned for the political posts that subsequently led to the Presidency. In his late twenties, Woodrow Wilson was also obliged to give up his work, and he spent several months in England recovering from a nervous breakdown. This sojourn abroad and the physical rest it involved gave him time to do more studying and reading than he had been able to do before. All these advantages were turned to good use in later years.

Bobby Jones was a sickly child and began playing golf to build up his strength. It is quite

likely that had he not been forced to devote considerable attention to his health in those early years, he would never have become more than locally famous.

Partially deaf at 30 and entirely deaf during his later years, Beethoven was forced to live in semisolitude and found ample leisure to develop his talent for music which made him one of the world's immortals. Mozart, too, was prevented by the state of his health from taking part in the strenuous activities of his time and devoted his undiminished enthusiasm to the development of his genius. Turning to the present, one finds that Mrs. Margaret Ayer Barnes, whose novel "Years of Grace" won the Pulitzer prize in 1931, began writing while recovering from an automobile accident several years ago. Another outstanding American author, Mary Roberts Rinehart, told in her recently published autobiography that she did her first serious writing for publication while she was a semiinvalid.

Roger Babson, one of the world's most noted business advisors, a prophet of economic trends, started the famous Babson statistical service while recovering from a serious illness. Elizabeth Barrett Browning was an invalid almost from childhood, yet she gave the world some of its most beautiful poems. Nicolo Paganini became a great violinist while suffering from a fatal disease. Johann Friedrich von Schiller did much of his best work while combating tuberculosis. René Théodore Laennec was also a tuberculosis sufferer, and his own experiences resulted in the discovery of the stethoscope.

Leigh Hunt, John Keats, Albert Edward Wiggam, Ralph Waldo Emerson, Will Irwin, Robert Louis Stevenson, Sidney Lanier and many others found, as did Eugene O'Neill, that the physical isolation and inactivity imposed by disease could be turned to good account in studying life and writing about it. Many of the world's renowned physicians, including a number who are experts in the fields of tuberculosis, heart ailments and cancer, have contributed mightily to humanity's warfare against disease in all its forms as a result of their own sufferings. The contributions of Edward Livingston Trudeau, a tuberculosis sufferer, and of Pasteur, who worked under the handicap of paralysis after his forty-sixth birthday, are typical.

A large number of important positions are held by persons who are blind. Among these are Dr. N. Gustaf Dalen, inventor of the automatic, flashing lighthouse lamp; G. S. Hurst, advertising manager of one of America's largest soap and shaving cream manufacturing firms; B. Frank Irvine, editor of the Portland (Ore.) *Journal*, and Senators Schall of Minnesota and Gore of Oklahoma. Helen Keller, winner of numerous honors as one of America's most notable women, has largely overcome the triple handicap of being blind, deaf and dumb.

"The life that is worth living is the life that gives us a battle worth fighting or a struggle worth partaking of," Dr. Milton J. Hoffman, president of the Reformed Synod of America, said in a recent sermon. "Obstacles in our paths are the divinest agents the Creator can give us. If we face them and conquer them, we can become mighty men."

"It cannot be denied that a certain fragility of physique has definite advantages from this point of view," wrote an anonymous but presumably successful author in a recent issue of *Harper's Magazine*, describing his own illness and the part it had played in his literary success. "It is certainly true that ill health has helped me to avoid many of the interruptions and distractions that make literary careers difficult, if not impossible."

A vigorously expressed view on the more than casual relationship between physical weakness and unusual achievement seems to be held by H. L. Mencken, editor of the *American Mercury*, who wrote as follows in a recent editorial:

"Nor is there any ponderable body of fact behind the common notion that physical health is necessary to mental achievement. Some of the noblest thinking that history can show was done by invalids. In fact certain kinds of thinking seem to be done better by invalids than by healthy men, and Nietzche was not far wrong when he argued that the world owes a lot to the tubercle bacillus and the spirochaeta pallida."

Franz Schubert, the composer, wrote in a letter to a friend that "my immortal melodies are born of my sorrow," thereby leaving the impression that, had misfortune and unhappiness passed him by, he probably would have been little more than any other musician.

But one does not have to study the lives of men and women of genius to find examples of success resulting from illness. Dr. Joseph Walsh of Philadelphia in the course of an address before a group of student nurses a few years ago described several instances within his own experience and observation in which ordinary men and women had made ill health the turning point in their careers.

He told, for instance, about a maid servant, 24 years old, who lost her health in 1903 and was obliged to give up her work and undergo treatment for a chronic illness. Her occupation had been general housework in a West Philadelphia

household, and her compensation, which she seemed to consider adequate, amounted to about $1.75 a week. During her illness, which lasted about six months, she acquired a desire for some kind of special training, became a student nurse, was graduated at the end of the prescribed training period and subsequently became departmental head nurse in one of the largest hospitals of its kind located in the United States.

Another example was that of a young married man who, prior to losing his health, was a clerk drawing a small salary on which he had to support himself and his family. After partially regaining his shattered health, he was afraid to return to his old job and with considerable trepidation went into business for himself. A few years later he had accumulated half a million dollars and during the World War he received an unusual honor from a great philanthropic organization.

Hospital officials, physicians in private practice and others in a position to observe the tides of incoming and outgoing patients and watch their careers after regaining their health know of innumerable other instances similar to those described in which illness, instead of being an insuperable obstacle to success, has been made a stepping-stone to brilliant achievement.

Danger Lurks on the Gasoline Trail

MOST of the country's 32 million automobiles will soon be rambling up and down the highways. Already week-end traffic is beginning to assume midsummer proportions. Many of us are now suffering from "motor itch" —the great American urge to go places and see things.

It will be great fun, of course, to follow the gasoline trail once again. Also—unless all signs fail—it will be just about as dangerous as ever.

Every fifteen minutes of 1931 there was a motor vehicle fatality. The year's total was 33,000 fatalities and there were nearly a million nonfatal injuries.

If history repeats itself, the deadly toll will increase throughout the coming summer, reaching its peak in early fall.

There is just one way to knock the props out of the theory that what has happened during recent years is about to happen again. The secret lies with the individual motorist, in his ability to analyze highway hazards, to diagnose his own case and to discipline himself to drive carefully at all times.

In the following compilation of hazards the National Safety Council calls attention to the most important causes of highway mishaps and tells how accidents may be avoided:

Speed.—Speed is a major cause but not the major cause of auto accidents. Drivers need to develop a sense of "relativity" regarding speed. Forty miles on a lightly traveled country road may be safe under some conditions but dangerous under others. Depend on common sense rather than on the speedometer. Adjust speed to conditions and obey prescribed regulations.

Improper Signaling.—Know what you are doing when you signal. The other person has a right to assume that you know your business. Always signal when stopping, turning or pulling away from the curb.

Running Out of Line.—In heavy traffic stay in line. When one is cutting around the line, collisions are usually serious because one usually speeds up to get ahead. Remember it is hard to gage the other person's speed.

Turning.—In turning, alertness means everything. It is essential to know local traffic rules relative to turns. Obey the laws and make turns slowly. Give the pedestrian the benefit of every doubt in going around corners. Remember that he has a legal as well as a moral right to a safe crossing as long as he has started with the "go" signal. This right has been judicially established by the higher courts.

Sudden Stopping.—Brakes will stand only a certain amount of punishment. Sudden stopping is dangerous and should be avoided except in emergency. Sudden stopping often causes skidding and an upset.

One can't stop in less than 45 feet with four wheel brakes. It takes 80 feet to stop when one is going 40 miles an hour.

Grade Crossing Dangers.—Grade crossing fatalities were reduced more than 10 per cent during 1931, but a still better record can be made if motorists will only remember to "stop, look, listen and live."

Faulty Mechanism.—Be certain that the car is in good mechanical condition. Check the brakes and lights regularly and give the car a thorough going over at least once or twice a year for hidden defects.

Intoxication.—Alcohol is an important cause of highway tragedy. The drinking driver is a menace to himself and to all other users of the road. It is cheaper in the long run for the alcohol addict to take a taxi.

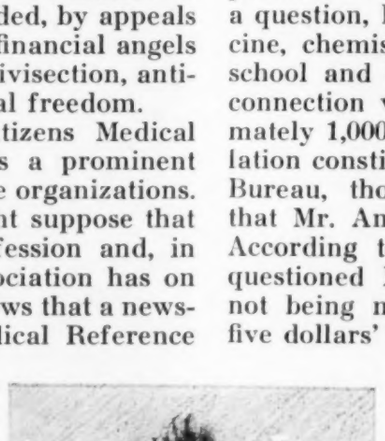
Mental Hazards.—Inattention is a common cause of highway accidents. Day-dreaming, window-shopping and enjoyment of scenery are not indulged in by the careful driver.

Vaccination and the Antivaccinationists

By W. W. Bauer

FROM time to time, organizations devoted to opposing scientific medical practices seem to awaken to a state of renewed activity after a more or less lengthy interim of comparative quiescence. These periodic attacks on scientific medicine are well known to most older physicians, who are also familiar with the methods employed in such agitations. As time goes on, however, new organizations spring up, frequently—like the Phoenix of legend—from the ashes of old ones that have burned themselves out. These agitators are liable to grow more subtle in their methods as time goes on and the public becomes wiser in regard to ancient dodges. Persons who have become prominent by reason of success in business or in the arts are frequently persuaded, by appeals to their sentimentality, to act as financial angels to organizations devoted to antivivisection, antivaccination and so-called medical freedom.

At the present time, the Citizens Medical Reference Bureau, so called, is a prominent example which well typifies these organizations. Judging from its name, one might suppose that it represented the medical profession and, in fact, the American Medical Association has on file an editorial which plainly shows that a newspaper mistook the Citizens Medical Reference Bureau for an organization of physicians and under this misapprehension published an editorial entitled "Physicians Strain at Gnats." In this editorial the paper very properly held up to ridicule the objection of the Citizens Medical Reference Bureau to a movement which proposed to erect a statue to the heroism of the dog team that carried diphtheria antitoxin to Nome when that isolated settlement was threatened with diphtheria during an Alaskan winter.



The United States Senate, in a hearing on a bill to prohibit the use of dogs for scientific purposes in the District of Columbia, effectively exposed the Citizens Medical Reference Bureau. The following information is gathered from testimony offered before the Senate's committee on the District of Columbia (Seventy-First Congress, Second Session on S4497, June 6, 10, 11 and 12, 1930): The Citizens Medical Reference Bureau is located in New York and consists of about 1,000 members throughout the United States; it has a membership fee of $5 or more. The secretary is Harry B. Anderson, from whose testimony these facts are taken. Mr. Anderson receives a salary of $6,000 a year, and in explanation he pointed out that some of the contributors give not merely $5 but $10, $25, $100 or $1,000. Mr. Anderson has been in this work, he stated, for seventeen years; throughout this period he has been on a salary. In response to a question, he stated that his training in medicine, chemistry and surgery consisted of high school and college courses, and experience in connection with various magazines! Approximately 1,000 members among 120 million population constitute the Citizens Medical Reference Bureau, though perhaps it should be noted that Mr. Anderson claims other sympathizers. According to Senator John M. Robsion, who questioned Mr. Anderson, these sympathizers, not being members, apparently did not have five dollars' worth of sympathy.

Having seen what this Bureau is we may now turn our attention to a circular, entitled "What a Fact-Finding Legislator or Other Public Official Would Discover About Compulsory Vaccination," which was recently published by the Bureau at its headquarters, 1860 Broadway, New York City; the circular was dated Aug. 31, 1931; it sold at 10 cents a copy, or $5.00 per hundred copies. In this circular appear a number of quotations from reputable medical sources, such as *The Journal of the American Medical Association*, state medical journals and the *Public Health Reports* of the United States Public Health Service. These quotations purport to demonstrate that physicians are actually

opposed to vaccination and that their true attitude is misrepresented by cliques which have usurped (according to the inference which it is intended to convey) the leadership of the profession. I shall cite a few of the quotations from the circular, together with parallel quotations from the original which demonstrate effectively the methods employed to misrepresent the writer's intention. The methods include separation of isolated phrases and sentences from the context in such a way that their true meaning is distorted, quoting in reference to one subject what was actually written about an entirely different subject, omitting important qualifying phrases or sentences, abusing statistics until they seem to show an altogether different set of facts from those which they really demonstrate. Such portions as the publishers of the circular select, they quote correctly; they are too shrewd to resort to direct garbling.

The first example shows how an editorial in *The Journal of the American Medical Association,* written about influenza (in which the efficacy of biologic products admittedly remains to be demonstrated) is partially quoted to prove that vaccination against smallpox (known to be efficacious) is recommended by the medical profession from commercial motives.

The Citizens Medical Reference Bureau quotes this, in relation to vaccination:

> The danger of commercialized therapeutics has been enormously increased by the introduction of biologic products. These substances offer a rich field for the commercially minded. . . . (From editorial in *The Journal of the American Medical Association,* Feb. 14, 1920, p. 466.)

But the editorial in *The Journal of the American Medical Association* was written about influenza! It contained the following information:

> The danger of commercialized therapeutics has been enormously increased by the introduction of biologic products. These substances offer a rich field for the commercially minded, first, because of the remarkable results which seem to have followed the use of certain products of this type; second, because the field is new and the mode of action of these substances not readily understood, and, third—and most important—because, by the very nature of the problems involved, few physicians are well informed concerning them. The influenza epidemic of last year was widespread and fatal in character. It stimulated earnest research in methods of prevention and cure. We were all in a frame of mind to grasp at any straw. Here and there some worker would cry "Eureka"—only to be disappointed when his product was actually put to the test. However, there were more than enough manufacturers ready to place any product on the market with specious claims that could not be positively denied. Vaccines, serums, proteins—all were advanced with such glowing statements as to their properties that only those physicians who kept their feet firmly on solid ground could resist the appeal. Now we have another epidemic—mild, it is true—but the memories of last year make the average physician ready to accept anything which promises hope, and the manufacturers "make hay while the sun shines." Physicians have been and are being deluged with literature on the prophylaxis and treatment of *influenza.* So far as we know, few publications have contained any word of warning on these matters. One exception has just come to notice: the *Medico-Military Review,* a semimonthly mimeographed publication sent to medical officers of the Army by the Surgeon-General's Office. This says:

> "YOU ARE REMINDED that so far a comprehensive analysis of results obtained by the use of monovalent and polyvalent vaccines in the prevention of influenza has not demonstrated their value. Much carefully controlled experimental work is now being carried out on this subject, both in civil institutions and in the Army, and any worthwhile advances will be reported in the *Review* from time to time. If a prospective vaccine is developed, it will be prepared at the Army Medical School for general distribution and all medical officers will be duly notified. The general use of the present commercial polyvalent protective against influenza is not considered desirable. Numerous telegrams and other requisitions are being received for influenza vaccine. In view of the fact that no prophylactic influenza vaccine is available, such requisitions should be discontinued."

Another line of argument is intended to minimize in the mind of the layman the seriousness of dangerous diseases by pointing out that it is illogical to recommend immunization of all persons against such diseases as smallpox or diphtheria, when only a percentage of these groups might be expected to get the disease, even under epidemic conditions. This line of so-called reasoning ignores the fact that these circumstances are due to preventive methods of which vaccination is typical. The antivaccinationists also fail to mention that of those children who do get diphtheria or smallpox a number may die because their parents are ignorant of the existence of methods of treatment that will save life or because these parents have been influenced by propaganda—emanating from just such sources as the one under discussion—against the proper use of established therapeutic agents like antitoxin.

As quoted by the Citizens Medical Reference Bureau:

> "Less than 15% of all children would ever get diphtheria even under epidemic conditions, while 100% are prospects for toxin-antitoxin. The percentage who would ever get smallpox, under present time conditions, is even less; but 100% are prospects for vaccination." (From an article

Additional paragraphs from the SAME ARTICLE *not* quoted by the Citizens Medical Reference Bureau. Why?

> "I am informed that epidemic and endemic infections cause only 12% of all deaths and that this percentage is declining very rapidly. Less than 15% of all children would ever get diphtheria, even under epidemic conditions, while 100% are

written by Dr. Mather Pfeiffenberger while he was president of the Illinois State Medical Society and published in *Illinois Health News*, January, 1927, p. 10.)

prospects for toxin-antitoxin. The percentage who would ever get smallpox, under present time conditions, is even less; but 100% are prospects for vaccination."

"Typhoid fever is disappearing, due to sanitation, but vaccination should be used when the individual travels into unknown territory and countries."

These antimedical, not to say antisocial, propagandists further attempt to discredit scientific medicine by capitalizing the difficulties which remain to be overcome in matters of diagnosis and treatment. When medical writers or speakers in professional assemblies emphasize the points of differential diagnosis between similar diseases, such as smallpox and chickenpox, these agitators seize on the published statements and extract from them just enough to make it appear that physicians do not know whereof they speak. The following parallels plainly show how carefully they avoid quoting those parts of the same article which will not serve their purpose:

Quoted by the Citizens Medical Reference Bureau:

"The remarkable resemblance between chickenpox and smallpox, has led some of our most noted authorities into mistaken diagnosis, and a difference of opinion between authorities of equal repute are on record." (From an article by Dr. C. S. Nelson in the *Illinois Medical Journal*, January, 1931, p. 67.)

Other parts of the SAME ARTICLE *not* quoted by the Citizens Medical Reference Bureau. Why?

"The frantic efforts made in pre-vaccination days to control or even mitigate the awful scourge of smallpox is a pathetic story. Contrast this with the apparent indifference manifested among the people of today. . . .

"There is practically no dissension among the 8,000 or 10,000 physicians of Illinois, that universal vaccination would eliminate smallpox entirely. Must we sit idly by and see a comparatively few anti-vaccination cranks dictate the policies of the State relative to this matter?"

The antivaccinationists lay great stress on the mildness of smallpox; indeed, they advance this characteristic as a reason why vaccination should be abandoned, and they quote portions of official statements while carefully suppressing other portions which set forth the truth about the seriousness of smallpox as it has occurred in a number of outbreaks in the United States in recent years. They are also careful to suppress any mention of the fact that severe cases of smallpox may spring from extremely mild cases. They take care to emphasize popular names, such as Cuban itch and Philippine itch, with the obvious intention of creating the impression that, since these diseases, which are actually mild smallpox, are popularly regarded as of no importance, smallpox itself is not to be feared.

Quoted by the Citizens Medical Reference Bureau:

"The mildness of the form of smallpox commonest at present is one reason for endeavoring to make preventive vaccination as harmless and as mild as possible." (From information issued by the United States Public Health Service in *Public Health Reports*, Jan. 28, 1927, p. 237.)

"It is probable that the so-called 'Cuban Itch' and 'Philippine Itch' observed after the War with Spain, the mild form of smallpox prevalent in America and alastrim are identical." (United States Public Health Service in *Public Health Reports*, Dec. 9, 1921.)

Other statements from *Public Health Reports not* quoted by Citizens Medical Reference Bureau. Why?

"22. Is there another contagious eruptive disease, intermediate between smallpox and chickenpox in severity (variously called alastrim, milk pox, amaas, or varioloid varicella), which might be mistaken for either of these two diseases?

"No. Outbreaks of smallpox occur of all grades of severity, some with a mortality of 70 per cent among those attacked and some with a mortality of 0.01 per cent. Since 1896 a mild form has been increasingly prevalent in the United States and countries in communication with the United States, having a fatality of about 0.1 per cent among the unvaccinated. The strains of the disease present just previously had been much more severe, and from time to time outbreaks are now occurring with a fatality rate of about 30 per cent in the unvaccinated. Each of these strains in general breeds true to its respective type, and mild cases contracted from severe give rise in turn to severe and fatal cases."

Having bent every effort to prove that vaccination is unnecessary because smallpox is too mild to be worthy of serious regard, they next turn their attention to attempting to prove that vaccination will not prevent smallpox, again presenting garbled quotations taken from medical sources which, in themselves, command respect. This is not as it used to be. In days gone by, they quoted from doctors of questionable reputation or from doctors in foreign countries whose professional standing would be difficult to ascertain and indeed impossible for the layman to

judge. Having been exposed times without number in this practice, they turn, with ingenuity worthy of a better cause, to sources which in themselves are authentic, but they do not present them honestly, as witness the following parallel:

As quoted by the Citizens Medical Reference Bureau:

"Will a nonimmunized person contract smallpox if exposed to the disease? By no means uniformly. Exposure to smallpox, especially to the milder forms, without contracting the disease frequently occurs and is no definite evidence of immunity. The number of cases of smallpox among the unprotected persons in contact with patients suffering from the disease is very much less than 100 per cent. . . .

"The purpuric, uniformly fatal, form of smallpox is the most difficult to prevent by vaccination, and cases of this form, without a true smallpox eruption, may occur in persons with a fairly good vaccination history." (From *Public Health Reports*, Jan. 28, 1927.)

Other passages of the SAME ARTICLE *not* quoted. Why?

"The chance of taking the disease varies with the intensity of exposure and with the severity of the strain of smallpox to which one is exposed. . . .

"21. What effect does previous vaccination have on smallpox?

"If recent, the vaccination will protect against the disease entirely.

"If the protection is not quite complete, on account of the vaccination having been performed too long before, the toxic early stages of the disease are the first to come out from under protection, and the resulting illness may have a fairly severe febrile onset for two or three days, though the following eruption be scanty and the indisposition trivial. The purpuric, uniformly fatal, form of smallpox is the most difficult to prevent by vaccination and cases of this form, without a true smallpox eruption, may occur in persons with a fairly good vaccination history."

Emphasizing the exception, as if it were the rule, is another pet method of antivaccination agitators. In the following paragraphs will be seen an example of such tactics in which they attempt to show that immunity acquired by vaccination is lost too soon to make vaccination efficacious. We present their arguments followed by another quotation, not taken from their circular. The comparison speaks for itself.

Immunity resulting from a successful inoculation of vaccine virus varies with different individuals. Some years ago, Kitasato (*The Journal*, March 25, 1911, p. 889) published the results of revaccination of 951 persons, showing that in some cases the immunity acquired from the first vaccination had disappeared in less than a year, as indicated by a second successful take:

After	1 year,	13.6 per cent
After	2 years,	32.9 per cent
After	3 years,	46.6 per cent
After	4 years,	57.3 per cent
After	5 years,	51.5 per cent
After	6 years,	63.8 per cent
After	7 years,	72.5 per cent
After	8 years,	80.0 per cent
After	9 years,	85.0 per cent
After	10 years,	88.6 per cent

Lescohier (*The Journal*, Aug. 16, 1913, p. 487) observed 251 revaccinations, finding that among 7 persons vaccinated within the previous year 2 showed successful takes, 28 per cent; 12 vaccinated within two years, 33 per cent takes; 19 vaccinated within three years, 48 per cent takes. Other investigators have reported similar figures.

It is probable that the administration of vaccine virus renders a greater degree of protection against infection with smallpox than it does against revaccination with vaccine virus. At least, cases of smallpox appearing within two or three years after a successful take are rare. A few, however, have been reported. In Kansas City, in the epidemic of 1922-1923, there were two cases of smallpox in persons who were vaccinated two and a half years previously and who exhibited good scars (Leake and Force: *The Journal*, Sept. 29, 1923, p. 1072). In the Denver epidemic of the same period, one case was reported in a child who had been successfully vaccinated seven months previously, but the diagnosis was doubtful (Sharpley, *Am. J. Pub. Health* 13: 222, March, 1923).

In the United States Navy, 77 cases of smallpox occurred in 1922, among them 12 in men who had been successfully vaccinated within periods of fifteen months to two years (U. S. Navy M. Bull., 19: 371, Sept., 1923).

Immunity acquired by vaccination is lost sooner in the Negro race than in the white race. . . . —From *The Journal of the American Medical Association*, June 20, 1931, p. 2139.

Now read the following statements quoted from an article by Dr. Samuel Woodward and make your own comparisons:

Is there any reason why in the eleven years 1913-1923 Ohio should have 51,913 cases of smallpox

Washington	24,183
Wisconsin	29,109
Indiana	40,082
Iowa	29,549
Kansas	29,831
Utah	17,852
Oregon	11,999
California	19,702
While Massachusetts had	457
New Hampshire	241
New Jersey	936
Rhode Island	20

Why did Porto Rico with 1,299,809 inhabitants have but 137 cases during this period, while the state of Washington with about the same population (1,356,621) had 24,183? Is it easier to control smallpox in Porto Rico, where it was endemic under Spanish rule, than in the state of Washington? Why did Porto Rico have but 14 cases in the last 6 years, while Georgia had 7,629? Georgia has twice the population and 544 times as many cases of smallpox. . . .

Porto Rico was never free from smallpox until it was vaccinated by the Army of Occupation in 1898. (From an article entitled "Smallpox in the United States, Smallpox in Our Insular Possessions, Smallpox in New England, Smallpox in Massachusetts, 1913-1923," which appeared in the *Boston Medical and Surgical Journal*, Jan. 8, 1924, p. 60.)

If a physician, in a published statement, points out that vaccination is one of the means of distinguishing between chickenpox and smallpox in doubtful cases, the antivaccinationists quote him in such a manner as to create the inference that erroneous diagnosis is the rule instead of the exception, but they carefully take only as much of the statement as will serve their purposes. In the following quotations they were exceedingly careful not to quote the commis-

sioner of health of Michigan in his recommendations for vaccination but only to quote him to the extent which would further their propaganda.

Quoted by the Citizens Medical Reference Bureau:

"Recent vaccination is given as one of the deciding factors in deciding if case is smallpox or chickenpox in the *Weekly Bulletin* of the California Department of Health, February 15, 1930 and in an article by the Commissioner of Health of Michigan in the *Journal of the Michigan State Medical Society*, March, 1927."

These paragraphs from the SAME ARTICLE were *not* quoted. Why?

"This is the time to urge people to become vaccinated and revaccinated. Let us see to it that everyone in our communities who has not been successfully vaccinated within five years becomes vaccinated at this time; also let us be careful in our diagnosis of any case resembling smallpox and see to it that the mild cases are reported and quarantined.

"There is no reason why we should have a repetition of some of the epidemics that we have seen in Michigan in the past and with the cooperation of the physicians and health officers this cannot happen.

"Very truly yours,

"Guy L. Kiefer, M.D.,
"Commissioner, Collaborating Epidemiologist, U. S. Public Health Service."

The misuse of statistics unintentionally is a sufficiently frequent and regrettable source of error, but deliberate abuse can scarcely be defended. A statement from the Citizens Medical Reference Bureau—either a lamentable error or an egregious abuse—shows the number of deaths from smallpox in a year per million population in the United States; the specific year is not mentioned, but by grouping these figures with the vaccination deaths for the years 1925 to 1928, inclusive, they imply that this smallpox death rate covers the same period, whereas the statistics of the United States Census Bureau plainly show that the Citizens Medical Reference Bureau has taken for its use only the figures most favorable for its own purposes instead of truthfully reporting exact parallels. There is an even greater fallacy in its alleged statistics because 7 million vaccinations in a year in the United States is the estimate of the U. S. Public Health Service—not 1 million. It is also noteworthy that they do not say that smallpox deaths in that four-year period totaled twenty-four times the number of deaths which they attribute to vaccination. And they are indeed careful to give no sources for these so-called statistics. The following statement is quoted from a circular of the Citizens Medical Reference Bureau:

Deaths following vaccination in United States, 1925-1928 (these deaths are from tetanus only and do not include deaths from encephalitis, etc., not reported or from other diseases lighted up by vaccination)	64
Average per year	16
Estimated number of vaccinations per year in United States	1,000,000
Deaths per million vaccinations in United States	16
Deaths from smallpox per year per million population in the United States	1.18

The mortality statistics of the United States Census Bureau for 1925, 1926, 1927 and 1928 show the rate per million population, the four year average being not 1.18, but 3.3:

Deaths from Smallpox
in the Registration Area of the United States
1925-1928 inclusive

	Number	Rate
1925	709	7
1926	377	4
1927	145	1
1928	131	1

Another expedient to which the antivaccinationists frequently resort is to hold up foreign countries as an example to the United States. England is their favorite, where, in 1907, compulsory vaccination was modified by creating an exemption for those who would certify to conscientious objection to vaccination. The antivaccinationists are fond of extolling so-called liberal attitudes toward smallpox vaccination in England, as in the following statement from the Citizens Medical Reference Bureau:

England has taken the lead in endeavoring to present the facts about vaccination in a spirit of frankness which is highly commendable. Will health boards in the United States continue to create smallpox scares and try to make it appear that vaccination is harmless and a sure protection or will they follow the lead of the Ministry of Health of England? Whichever they do, there is certainly no sound basis for any board of health group of physicians to ask that any law, making vaccination a requirement be left on the statute books.

Here, however, are figures from England, which the antivaccinationists, for reasons best known to themselves, are careful never to quote, even while they praise England for fairness in representing vaccination to its people in such "a spirit of frankness."

The following statements were made by Dr. S. B. Woodward in an address ("Vaccination or Smallpox—Which?") delivered before the committee on public health of the Massachusetts

Legislature at a hearing, held Feb. 6, 1924, in support of House Bill 414.

Why, say the antivaccinationists, do we not hear more about smallpox in England, where the conscientious objector law allows the parent to decide whether or not the school child shall be vaccinated? I have said year after year in answer to this, "Wait awhile and you will have your answer." It has come at last, as the number of unvaccinated children has grown until it is estimated that 50 per cent of all children in England are unvaccinated. Minor outbreaks of smallpox are of constant occurrence. The average number of cases reported per week has risen from 19 in 1922 to 46 in 1923, and 89 were notified in the week ending December 17. In some areas, in the north and in the "midlands," it is virtually endemic, which means, of course, constantly present. It is endemic in certain parts of this country and has been for some time. Forty-six cases per week means 2,461 in a year and—mark my words!—in a few more years it will be nearer 23,000 than 2,300 if more universal vaccination is not resorted to.

Year..	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Cases..	111	90	57	78	135	6	51	262	243	311	967	2461

And here is a clincher! "Smallpox is becoming increasingly rare in Europe, bar England," writes Dr. Woodward in "Arguments for Compulsory Vaccination of All School Children."

It is but natural to expect that antivaccinationists will emphasize unfavorable complications of vaccination. The medical profession is in the habit of reporting scientific facts without bias, and consequently medical literature contains reports of the complications of vaccination as well as of its favorable results. These complications, which are admittedly exceptional, are seized on by the antivaccinationists and made to appear as if they were common:

As quoted by the Citizens Medical Reference Bureau:

"U. S. Health Service Asks Health Board to Report Cases of Encephalitis, Meningitis, Etc., Occurring 30 Days After Vaccination.

"Any central nervous system involvement occurring within 30 days subsequent to vaccination is worthy of special study. Cases reported as poliomyelitis, encephalitis lethargica and meningitis, might well be investigated as to their vaccination histories, in order that cases possibly of the post-vaccinal type may not be overlooked." (From an article by Director G. W. McCoy, U. S. Public Health Service, in the *Journal of the Medical Society of New Jersey,* December, 1930.)

Other passages in the SAME ARTICLE *not* quoted. Why?

"Physicians are requested by the State Department of Health to pay particular attention to complications of smallpox vaccination, with special reference to encephalitis. It is requested that the department be promptly notified of any case. Director G. W. McCoy, United States Public Health Service, Washington, D. C., has written to Director Bowen inquiring if any cases have developed in New Jersey.

" 'There has not come to the attention of this department any case of encephalitis following vaccination against smallpox in New Jersey,' replied Director Bowen.

"Director McCoy in communicating with the New Jersey Department of Health said this complication has appeared in the United States, though the total number of cases is very small."

Every well informed physician realizes that there are contraindications to vaccination, and he takes them into account. The antivaccinationists take these contraindications and play them up as if there were danger of activating serious latent disease with every vaccination. The following parallels speak for themselves:

As quoted by the Citizens Medical Reference Bureau:

"U. S. Health Service and Other Authorities Warn That Vaccination May Light Up Diseases.

"There is a curious relation in leprosy which tends to cause the lighting up of leprous lesions during the course of the vaccination, but which may promote more rapid healing thereafter. Serious lymphomatus diseases, including lymphatic leukemia, may be made worse by vaccination." (From *Public Health Reports,* Jan. 28, 1927.)

The whole paragraph, as here quoted, was *not* quoted by the Citizens Medical Reference Bureau. Why?

"16. What are the contraindications to vaccination?

"In general, skin diseases, particularly eczema, are the only conditions which will justify school attendance and at the same time be contraindications to routine vaccination. This is on account of the danger of diffuse vaccinia from carrying the vaccine into the open lesions of the skin disease, or the danger of contaminating the vaccination site if the skin lesions are purulent. Patients with such diseases as tuberculosis are in no wise harmed by properly performed vaccination. Acute infectious diseases may cause a vaccination 'take' to be delayed or atypical, but are not in themselves contraindications in case of possible exposure to smallpox. There is a curious relation in leprosy which tends to cause the lighting up of leprous lesions during the course of the vaccination, but which may promote more rapid healing thereafter. Serious lymphomatous diseases, including lymphatic leukemia, may be made worse by vaccination."

I have dealt with but one of many circulars published by the antivaccinationists under the names of their numerous organizations. The references which they present have here been traced back to the sources from which they were taken, and in every instance it has been shown that the persons whom they quoted, far from being opposed to vaccination or in doubt as to its efficacy and essential safety, are all enthusiastic advocates of vaccination.

The question is whether persons who will so distort and misrepresent facts as the antivaccinationists have done in this instance are to be believed in their other statements. Another interesting question is why distinguished artists or successful business men can be misled into lending the luster of their names to such invidious purposes.

Teaching Your

Easy Lessons

BREATHING AND BREATH CONTROL ARE THE MOST IMPORTANT FUNDAMENTALS — BREATHE IN THROUGH THE MOUTH AND —

SWIMMING is more whole-heartedly enjoyed by children than is any other sport. "How I wish my boy could swim! What is the best way to teach him? How old must he be before he begins?" Modern anxious parents are constantly asking these questions.

The idea that children are easily taught to swim is common among parents, but it is erroneous and not borne out by facts. Some children do learn easily in three or four lessons, but it takes the average child a greater number of lessons before he or she can be said really to swim. Much, of course, depends on the amount of time spent with each child, the regularity of the lessons and the degree of fear that the child has to overcome. Children differ; in a mass group of fifteen children, will be found four different physical and mental types: some are panicky from fear of the water; some are whimpering; some are timid and bashful, and a few are brave. Teaching adults is not so trying, as they always endeavor to do as they are directed, and they have some idea of order; yet older persons have a greater mental resistance to overcome. Children do, however, have one distinct advantage in that they are more supple than adults and have quicker muscular movement; once they learn to swim they continue to improve rapidly.

OUT THROUGH THE NOSE — PRACTICE THIS OVER AND OVER —

At what age should a child be taught to swim? A few learn at 3 years or even less, but usually these are children under the direction of a skilled swimming teacher who gives them a great deal of time and individual coaching. At 6 years, all normal children should be given their first swimming lessons.

The first step is to gain the child's confidence and let him get used to being in the water. This may take several lessons, for the child should never be forced. The old method of throwing him in to make him swim is mostly hearsay and exaggeration. Time means nothing to a child; for this reason an unlimited amount of time and patience is required. Children's restlessness and lack of attention are factors that must be taken into consideration. The attention span of a child is short, and for this reason the instructor should alternate the swimming exercises with short play periods; then if a child still does not pay attention, he should be taken out on the bank to go through the exercises slowly. Two or more children working together in the water will often do better than the child who takes his lessons alone, as they will imitate and try to excel one another.

WATER-WINGS ARE THE BEST WATER DEVICES BUT SHOULD BE USED ONLY UNTIL THE CHILD OVERCOMES FEAR AND LEARNS BREATH CONTROL —

THE FIRST STROKE TAUGHT IS THE DOG PADDLE — (FROM THIS IS GRADUALLY EVOLVED THE 6 BEAT CRAWL, THE FASTEST STROKE)

AND

NEXT, THE BACK SCULLING STROKE —

Child to Swim

By BOB BOARDMAN

IT IS ALMOST IMPOSSIBLE TO TEACH BEGINNERS IN COLD WATER— WARM WATER RELAXES THE MUSCLES —

The ideal conditions for instruction are to be found, of course, in fresh warm air during the summer months, on the outdoor beach in a quiet overflow tide pool. Many city indoor pools allow parents to bring their children the year around. The best depth is at the point where the child can stand on the bottom and still keep his face out of the water. The instructor should get in the water with his pupil whenever possible, as this gives the child a sense of security; also, the child will pay better attention, learning more quickly by example than by trying to follow instructions given from the bank. In a swimming pool the first few lessons should be from twenty to twenty-five minutes long and never more than half an hour. Children need a great deal of encouragement and should be praised whenever they do an exercise well. No matter how poorly a child swims, when he can take his feet off the bottom and swim a few strokes he has overcome the greatest hazard—the mental hazard.

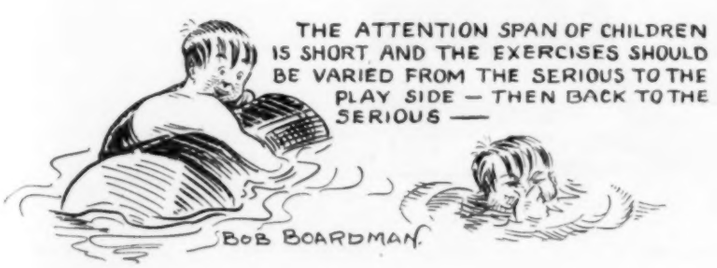
It is trying and almost impossible to teach any one to swim in cold water, as the cold tenses the muscles, chills the body and takes the attention from the lesson, while warmer water relaxes the muscles. In the average swimming pool, the water should be between 80 and 85 F. for beginners, and the room temperature from 65 to 70 F.

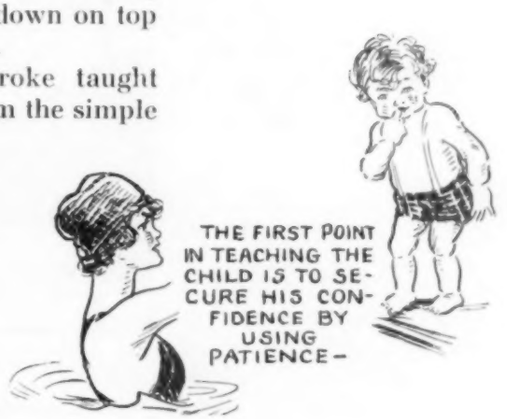
SWIMMING IS THE BEST BODY, SHOULDER AND LUNG DEVELOPER FOR GROWING CHILDREN —

The first lessons should teach correct breathing, which is the most important fundamental in swimming, as it helps to eliminate fear of the water and induces relaxation. Improper breathing is a barrier to the enjoyment of the water. With small children an excellent exercise for daily practice is in the bathtub. Have the child lie in water shallow enough to cover his body; after he has filled the lungs slowly through the mouth, have him blow the air out through the nose, with his head under water. Or he may place his face in a basin of cold water and make bubbles in the same manner. In a pool or other shallow water the same breathing exercise may be given, the hands being used at the same time in dog-paddle fashion. Considerable practice is necessary before the breathing can be mastered.

The "dead man's float" is also a good exercise. It consists of taking a full breath through the mouth, holding it and lying face down on top of the water, arms stretched in front, legs straight back.

Although swimming authorities disagree, the first stroke taught should be the dog paddle, as it is the most natural one. From the simple


THE ATTENTION SPAN OF CHILDREN IS SHORT AND THE EXERCISES SHOULD BE VARIED FROM THE SERIOUS TO THE PLAY SIDE — THEN BACK TO THE SERIOUS —
BOB BOARDMAN



dog paddle is evolved the 6 beat crawl stroke; this is the fastest of all strokes, and is the one used by Johnny Weissmuller and Helene Madison. After the dog paddle, the sculling stroke on the back should be taught, as the leg stroke is similar to that in the dog paddle. Have the child lie on his back, body straight, head back with ears submerged; hold him by the head. He may not like this at first because of getting water in his ears, but he will soon get used to it. The arms are kept under water and quite close to the sides, the back is straight, and the hands are cupped for the sculling stroke. This exercise gives the child confidence and helps to overcome his fear.

Children from 6 to 9 years of age can be appealed to through their imagination; reference to mechanical ideas, such as the steamboat and the windmill, and imitation of well known animals are valuable psychologic devices to reduce fear. The Brink System is excellent for initial lessons with groups of young boys and girls. It is named for Dr. B. Dean Brink and has been used widely in teaching children to swim. This system has been strongly recommended by the American Red Cross and has been printed in their literature; it has also been adopted by the Y. M. C. A., the Campfire Girls and the Boy Scouts. Some of the exercises in the Brink System are as follows:

1. The Hungry Duck: Put the face in the water and look to see how many fingers are held out by the instructor.

2. Motor-Boat Breathing: Breathe air in through the mouth (the carburetor) and out through the nose (the exhaust).

3. Jellyfish Float: Hug the knees, put the face in the water and hold this position until the back floats out of the water.

4. Turtle Float: Fall forward, face in water, arms and legs outstretched.

5. Windmill: Move the arms overarm fashion like a windmill.

6. Combination: Combine motor-boat breathing, steamboat kicks and windmill paddling.

Ordinary water-wings are the best of all water devices for helping beginners; they are simple, easily adjusted and a great help in perfecting a stroke, permitting the arms and legs to be used without danger of going under. They should be used only until the child overcomes his fear of the water and learns breath control. Wings are especially good when learning to coordinate the arm and leg strokes. At first, if a child lacks confidence in one pair of wings, two pairs may be used, but no child should be allowed to use them indefinitely, as in most cases he becomes too dependent on them. The wings may be placed under the arms and also at the small part of the waistline, but should not be allowed to slide down toward the feet.

When the child becomes more at ease in the water, it is well to have him try a new stroke now and then to encourage him to try new stunts with safety methods. A rope about the waist may be used at first in the deeper water, but soon under alert supervision the swimmer should be urged to go without it. Many novices acquire the idea that because they can swim a few strokes they are able to take care of themselves in deeper water; a little learning is dangerous, but constant practice will overcome this. As the child becomes more proficient, each stroke should be practiced and perfected. An expert teacher should supervise the lessons, for a few faults will remain with a beginner for life if not corrected early. This is often noticed in old-time swimmers.

Leading physical educators and doctors consider swimming the best all-round sport for growing children because it exercises and develops the body, shoulders and lungs. Besides giving a feeling of safety, comfort and joy to the parents, swimming affords a lifelong pleasure and healthful sport for the child who learns in his early years.

Snickles and Snortles

the Circus Twins

By
NELLIE G. HERRIMAN

Chapter IV

A GREAT deal of fun may be had in a circus, especially for two little boys who have been named for sunshine and happiness; and when these little boys are twins, and clowns besides, there is no limit to the amount of pleasure that may be found among the performers and animals.

Snickles and Snortles not only found happiness for themselves but spread it among the throngs of people who came into the big tent to watch the performance; and when they made others laugh, they found themselves happier than ever.

"Every time I hear some one laugh," Snortles said to Snickles, "jolly little thrills chase up and down my back."

Sometimes it was scorchingly hot and the boys became so tired that they were almost ready to lie right down on the sawdust and go to sleep. Then some one would see them and laugh aloud, and the boys would forget how tired they were and work harder than ever.

Yes, indeed, there was work for them, and it was sometimes hard work, too. Standing on one's head or turning flip-flops may look quite easy, but it makes one tired after doing it for several minutes at a time. The enormous shoes which the boys wore and their red-and-white suits were quite heavy and awkward, so one can hardly blame Snickles and Snortles for wishing they might have time to play like other boys. However, when they saw how crowds which had come in gloomy went out smiling, they decided that the work was worth while and threw in an extra somersault or two for good measure; and not only did Snickles and Snortles *look* happy outside—they *felt* happy inside!

Out she would fly, high above their heads.

One day they were standing on their heads and eating apples when a little boy came into the tent with his mother and took a seat near the big central ring. He was carrying a beautiful blue boat with a white sail.

"Snortles," whispered Snickles to his brother, "did you see the blue boat?"

Snortles swallowed uphill before he tried to answer. "You must never talk with your mouth full," he whispered in return.

Snickles knew he was right, so he finished chewing his bite and swallowed uphill before he tried to answer. Then he whispered again: "But did you see the blue boat?"

Snortles rolled his eyes until he saw the boat. "Oh! What a beauty! What a beauty!"

Snickles crossed his feet in the air. "I'm going to have one just like it," he said.

"Boys, boys," said the ring master, "this is no time to talk. Go on with your chores."

Even little clowns have chores which must be done, so they set to work. They danced and fell down in their huge shoes. They picked themselves up and turned flip-flops. They saw a beautiful lady riding a

white horse. They tried to ride, too, but fell off with their big shoes in the air, and the boy with the boat screamed with laughter. The boys were careful to do their work exactly right, for part of it was important, although it looked quite foolish to the people who sat on the long boards.

Two long ropes lay on the ground, one on either side of the great sawdust ring. The clowns walked on these ropes, pretending that they were tight-rope walkers high in the air, and constantly fell off, becoming badly entangled in their big shoes. This looked like great fun, but they had to be careful to throw the ropes in exactly the right position when they were done with them, for in a moment two men in tights would come along and snatch them up.

At the same moment a lady who was swinging high in the air would fly away from her little trapeze. Out and down she would fly, and the people in the crowd would gasp, thinking she would surely fall. But at just the right instant the two men would jerk the ropes and a little swing would fly up to meet her. She would grasp it with one hand, and the crowd would sigh in relief, for she was not going to fall, after all.

Snickles and Snortles were especially proud to do this important work, for the lady was their mother. They thought she was the most beautiful woman in the world. Her eyes were kind and had merry lights in them from smiling so much. Her hair was like gold and her teeth shone like jewels. She wore white tights that were covered with spangles, so that she seemed to shine and sparkle all over when she walked. Her eyes, her smile and her spangles were so bright that they made Snickles and Snortles think about the sun when it peeped out of its dewy blankets in the morning.

Snickles' mind was full of the blue boat, but he was careful to do his part just right. After it was done, he and his brother went back to their own little tent. The other performers were still busy, but of course the smallest ones could not be expected to work so long. The boys removed their red-and-white suits, folded them neatly and placed them in the little brown trunk, with their long red noses, which curved like the handles of saucepans, on the top. They placed the big shoes in a neat row by the bunk. Soon they were splashing in great pans of water to remove the white paint from their faces.

They pretended to be tight-rope walkers.

"I suppose these funny faces do make other people happy," said Snortles, puffing and blowing. "But I feel a great deal better when my face is clean." He finished washing and dried his face on a clean white towel. "Will you come and help me pull grass for Susie?"

Susie was their favorite animal in the circus, excepting, of course, Dandy, the brown monkey. Susie was huge and gray, and she loved to have the boys run to her after the show. She stood at the head of the long row of elephants, for she was boss elephant of the herd. The twin clowns frequently pulled grass for her, for their mother had often told them that green things were best for animals and people.

"I believe I'll not pull grass today," said Snickles. "I have other work to do."

"What? Haven't you time to feed Susie?"

"Not today. If you will do my part for me, I will do your part some other day." Snickles was busily searching in the little tool chest which he carried with him wherever he went.

So Snortles went off to feed Susie, and Snickles began laying out his tools. A chattering came from his shoulder, but he did not hear it, being so busy. Soon a tiny brown paw came up and pinched his ear quite severely. Then he took Dandy from his shoulder and snapped his chain about a post.

"Dear me, Dandy, I forgot all about you. I believe we'll not bother to brush you up this evening. I forgot all about it when Snortles and I were washing, and I'm too busy now."

The wee monkey stared at him in disappointment. Dandy loved his brushing-up; nothing was better than to splash until he was dripping. Then he would shake himself hard, and whoever happened to be standing near would be dripping, too. Next, he liked to be brushed until his hair was smooth and shining, after which one of the twins would hold a mirror before him and let him admire himself. No wonder he was disappointed today.

When Snickles' mother came into the tent, Snickles was busily pounding. Dandy was cowering in the corner of the tent, his eyes heavy with unhappiness.

"What are you making, sonny?" asked the beautiful lady.

"Oh, Mother, it's going to be a blue boat with a white sail! A boy had one in the tent today,

and it was a beauty. When I get mine done, Snortles and I can play we are sailors. Will you give me a cloth for a sail, Mother?"

"Of course, and I'll show you just how to sew it," she answered. "But what is the matter with Dandy?"

"He hasn't been brushed up yet. I forgot him at first, and later I was too busy." Snickles fitted two boards together carefully.

"Well, you must remember to wash him well before bedtime. Poor little fellow! He feels so neglected!"

"I'll remember, Mother," Snickles promised, sawing hard.

"All right, son. Come to my tent tomorrow and you may have your white cloth. Don't forget that your supper will soon be ready. Little boys must have their supper on time!"

"I don't want anything tonight. If I hurry I can get my boat done. I don't want a bite to eat, honestly I don't!"

"Oh, but you must come to supper, even if it takes several evenings to finish the boat. You know you want to be a great acrobat some day, and every meal makes you a little stronger."

"All right, I'll be there on time." Snickles drove a nail into the board with quick strokes.

After his mother had gone, Snickles forgot all but his task. He worked fast, and Dandy watched him sorrowfully from his corner. Every few minutes the monkey chattered coaxingly, but his master was too busy to hear. When Snortles came back from the elephant tent the two boys washed their hands and went to the long mess tent, where the circus people ate their meals. The food was simple but well cooked, and meals at the long tables were jolly affairs. Tonight, however, Snickles gulped down his food hurriedly and slipped away long before Snortles' plate was clean.

Mose, the Negro cook, was standing in the entrance of the cook tent, and he rolled his eyes when he saw Snickles leave so quickly.

"What—What's de mattah, little funny-boy?" Mose asked. "Didn't yoh lak yoh suppah?"

"Yes, it was very good," Snickles said. "But I have to hurry, for I'm doing some work in our tent."

Dandy was chattering angrily when Snickles reached the tent. "Oh, poor little Dandy," said Snickles. "I forgot about you again. You should have had your supper long ago."

He ran back to the cook tent and asked Mose for a ripe banana for his pet. Mose gave him a large one, but it was not too big, for the poor little monkey was so hungry. As he stood watching Dandy eating his delayed supper, Snickles was sorry for his carelessness, but it was not long before he was interested in the boat again.

At 8 o'clock Snortles came in, brushed his teeth, washed carefully, put on his night clothes

Every few minutes the monkey chattered coaxingly, but his master was too busy to hear.

and went to bed. "Bedtime, brother," he said sleepily, pulling the blanket snugly under his chin.

"I'll come presently," replied Snickles absently.

The lights went out one by one in the circle of tents, but still he worked. The elephants trumpeted a few times, but Susie scolded them and they became quiet. The Bengal tiger decided he had exercised his voice enough for one day, turned around several times like a kitten and went to sleep. A deep, rumbling snore from the great tank told the circus folk that old Hippo was enjoying his beauty sleep. Pee Wee, the midget, strolled by and paused to see what was keeping the boy-clown up so late. Pee Wee never went to bed till late. Perhaps that was why he was so small.

"Yes, sir, that will be a fine boat," said Pee Wee, after Snickles had explained what he was doing.

"I'm not nearly done," said the clown, carving industriously. "I did so want to get it all done but the sail. But I'm afraid I'll have to stop pretty quickly, for I'm becoming sleepy."

"Oh, pshaw! What does a little sleepiness matter?" said Pee Wee. "I'll show you what to do for that." He left the tent and soon came in with a steaming cup in his hand. "Drink this coffee," he said. "Then you can work as long as you please. A little sleep more or less is not important. I often stay up all night and do well." He put the cup into Snickles' hand.

"I never drink coffee," said Snickles, putting the cup down. "I hope to become a great acrobat like my father, and coffee will keep me from being sure of my muscles."

"Nonsense! Who ever told you such foolishness?"

"My father—my mother—why, nearly everybody says coffee is not good for children."

"Oh, you are such a baby!" Pee Wee jeered scornfully. "You say you want to finish your boat, but you are too big a coward to drink the stuff that will let you do it." The dwarf danced a jig and pointed a teasing finger at Snickles. "I suppose you drink milk! Ho! ho! ho! Mammy's little baby boy!"

"I'll show you who is a baby!" said Snickles angrily, and he picked up the cup. The coffee was hot, but he drank it all and handed the empty cup to Pee Wee.

"Now you can finish your boat," said Pee Wee. He shook Dandy's chain until the miserable little fellow was wide awake again and then went out whistling in search of more mischief.

Far into the night Snickles worked. At last the boat was all done; even the masts were ready for the sail. He found a can of blue paint and a brush in the tool chest. He didn't know why, but his hands were so unsteady that he had difficulty in putting the paint on smoothly, and a great many large drops spattered on the floor of the tent. At last he was done, however, and the boat was set on the chest to dry.

Without waiting to remove his clothes, Snickles dropped on the bunk and drew the blanket over him. How jumpy he felt! His eyes were wide open, and he did not feel a bit sleepy, although his body ached with weariness. He wondered what time it was; just then one of the performing cocks in the wire cage crowed loudly. Why, it was morning! He had not meant to work all night. What would his mother say!

What a tired, stiff, miserable little clown he was the next day! It seemed as though the parade would never end, although he usually enjoyed it. He could not eat, even when Mose tempted him with especially cooked things. Oh, dear! If only the show were over!

He wished he could go to bed and sleep, sleep, sleep, but the show must go on. Snortles helped him dress in his funniest suit and painted his face for him. With Dandy on his shoulder and his big red nose curved like a saucepan handle, the sleepy clown dragged himself out into the big sawdust ring. He was not a bit funny, and all the clapping was for Snortles, who seemed to feel just fine. Dandy pinched Snickles' ear, and he went through the act as best he could.

When it was time to place the rope in exactly the right position, Snickles was badly tangled in it. He could see his mother swinging high in the air, waiting for the big note in the music which would tell her to drop from her trapeze. Everything was in readiness for the big moment—everything, that is, except Snickles. He was still entangled in the rope; it was wrapped about his feet, and he could not free himself.

He kicked in a frenzy of fear and excitement. Still the rope was not in the right place, although he was now able to step from it. Oh, hurry! hurry!

The big note sounded, and Snickles' lovely mother was flying toward the ground, unaware that her little son had been unable to do his part. The man in tights was screaming and trying to reach the rope. But it was not there! The man on the other side jerked his rope, and the little swing flew up into the path of the falling woman. She grasped it, but the one rope was not strong enough to hold her, and she continued to fall.

Everyone in the big tent was frozen in dismay. Even the performers closed their eyes, certain that the sparkling body would be dashed against the ground.

A little figure in a red-and-white suit dashed into the center of the ring. With a tiny brown monkey clinging to its shoulder, and its hands spread wide, it ran straight toward the spot where the falling figure must drop. Would he be there in time? His feet stumbled in the great, ridiculous shoes, and he fell. He scrambled to his feet and fell again, just as the woman in the spangled suit struck him. Down they went.

The crowd gasped, and held its breath. The little heap on the ground was moving, but neither the lady nor the clown had arisen.

A man in tights sprang to their assistance. In a moment the lady was on her feet, smiling and bowing. Snickles finally was able to untangle his feet, and he made such a deep bow that he ended in a somersault. Dandy clung to his shoulder, chattering in gleeful excitement. He thought this was a new game! Snickles landed on his feet, and the crowd clapped loudly. They could not see it, but underneath the paint his face was as white as it could be.

"Oh, Snickles, you saved my life," said his mother, as they left the tent together. "That was a brave thing for you to do. You might have been badly injured, and I'm sure that you are badly bruised. However, you saved my life by giving me a soft place to land, and I shall always think of you as a hero."

"No, I'm not a hero, Mother. It was all my fault. I'm a coward, for I let Pee Wee shame me into doing things that I knew I should not do. I'm selfish, too, for I could think only of something to play with, when I should have been thinking about doing my work better." Then he told her all about the night before.

"Well, let us forget this unhappy time," said his mother. "I will go to my tent to rest after the excitement. What are you going to do?"

"I'm going to bed to sleep and sleep and sleep," he said. "Sleep is the most important thing in the world for fellows like me, and I'll always keep the blue boat so that I'll not forget it."

(To be continued)

HEALTH and the SCHOOL

Edited by J. Mace Andress, Ph.D., 67 Clyde Street, Newtonville, Mass.

History Offers Opportunities for Study of Health

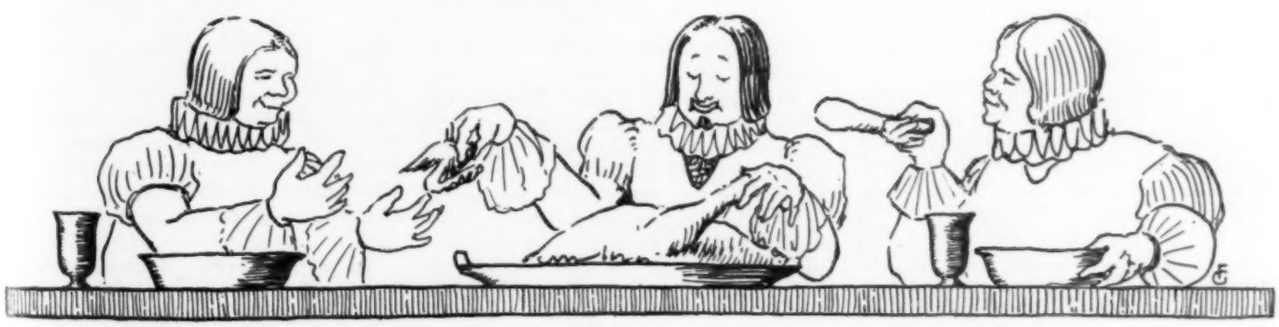
THE DISTINGUISHED American historian James Harvey Robinson says that "history in a broad sense is all that we know about everything that man has ever done, or thought, or hoped or felt. It is the study of past human affairs." Although custom and tradition have decreed that history must deal largely with military and political events, there is a growing tendency to consider history in an ever widening circle. Educators are beginning to realize that history tells not only about the events of the past but also something about past conditions and institutions. How the people of the past lived, how they built their houses, what kind of books they read and how they carried on their business are matters of universal interest. Such a story deals not only with the rise and fall of kings and dynasties but also with the common people and the manners and customs of the time. One can read how the common people as well as the nobles lived in the days of long ago, what food they ate, how they secured their clothing, how they spent their leisure time and how they fought and worshiped. From such a historic background it is fascinating to trace the development of modern society.

It is odd, indeed, that although one of the major interests of all ages was the fighting of disease by means of drugs and magic, there has been so little in history textbooks about hygiene and medicine. The stories of the superstitions and practices associated with health and disease constitute a most interesting chapter in the history of mankind. During ancient and medieval times there were men who fought courageously in the darkness with crude tools. It is easy to see in such surroundings the results of ignorance. More and more it is believed that Rome fell because of the mosquito pest and that the black death which wiped out millions of the inhabitants of Europe was due to the influx of flea-infected rats.

As one reads about the grand old days of chivalry, it usually seems as though those glorious days passed without a blemish, but if one faces the facts concerning conditions of that time, how different they appear. In referring to the middle ages in his book, "The Conquest of Disease," Dr. Thurman Rice says: "The great castles built by the feudal lords had no such convenience as a bath-room or any proper means of disposing of human filth. Excrement was thrown into the surrounding moat, and it is barely possible that the stench arising from the moat was of value in keeping away enemies. It is no wonder that heavy perfumes and salts were much in demand, and we are not surprised that the filth diseases took the people by thousands."

And what about the food that was served in the great castles? Prof. William Edward Mead, author of an interesting book entitled "The English Mediaeval Feast," says that nearly every dish was a riddle, being a hodgepodge of meats, fruits, spices, sugar, nuts and what-not, all mixed together and pounded into an impalpable pulp in a huge mortar. The reason for this maceration of food was due largely to a lack of forks. The ordinary fork, having been imported from Italy, did not come into use in England before the reign of James I. Before this time there was no easy way of cutting one's meat on a plate. The cutting was done by the carver, who served the meat in small pieces to be taken up in one's fingers; sometimes the contents of the dish were so soft that they had to be eaten with a spoon or dipped up with the fingers. Professor Mead's book gives a vivid picture of the banquet hall of medieval days, one that would give the student a touch of reality and valuable lessons in the hygiene and sanitation of that age.

All children are drilled in the facts of colonial history, yet how few know anything about the ways in which the colonists tried to keep well. Henry R. Vliets in "A Brief History of Medicine in Massachusetts" offers many pictures which could be used in almost any grade in colonial history. Few graduate students of American history would probably be able to tell about the kind of persons who practiced medicine in Massachusetts in the seventeenth century. Dr. Vliets tells us that it was in the hands of



three classes of people: "the governors, of whom John Winthrop the younger is the leading example; the ministers, typified by Thomas Thatcher; and a host of minor physicians, ministers and schoolmasters, some with medical degrees and some without."

As the reader casually turns these pages he gets a true view of colonial New England and of quaint customs practically unknown to school textbooks in hygiene.

If on a vacation one chances to wander through an old New England town or read a description of a New England city of a hundred years or more ago, it may be pleasant and restful. One pictures the warm glow of candles, wide opening fireplaces and crackling logs. From the outside, one thinks of the white painted houses, the narrow streets and the horse-drawn vehicles. The impression is that of a healthy sort of life, and one unconsciously thinks of such a town or city as being equipped with all the sanitary necessities of today.

Yet how different was the real picture. Dr. Howard W. Haggard, the writer of that entertaining book "Devils, Drugs and Doctors," describes the conditions of those old towns and cities. "In those houses," he says, "there were no bathrooms, no running water, merely a well and hand pump, and, in the streets, no sewers. There were no provisions for removing refuse; the vacant lots served for that. There were no fly screens in the houses, and there were hordes of flies. Around the church, the graveyard grew at a rate that would appall us today. And many, many of those graves, the majority, were for the young—the babe, the child, the young man and woman." In contrast, how wonderful is the modern city today with all its equipment for fighting disease and maintaining good health.

Even if one looks backward not more than fifty years in the history of any city or town, one finds unusual comparisons in the death records. Within the last fifty years, for example, in New Haven, Conn., the death rate for tuberculosis has dropped from 393 per hundred thousand to 57; for diphtheria, from 90 to 0.6; for infant diarrhea, from 109 to 1.9, and for typhus fever, from 43.2 to 0.

And in the great battle for good health within the last 50 or 100 years are found some of the world's greatest heroes, men who risked their lives for the health, happiness and lives of their fellow men. Pasteur, Lister, Koch, Trudeau, Noguchi, Jenner, Long, Roentgen, Reed, Gorgas, Schick and Banting are only a few of those superb heroes who have dared much to safeguard life.

From the foregoing it is evident that the story of medicine and hygiene must form a part of historical study. First of all, it is needed as a part of historical narrative. The story of medicine and hygiene is one of the most brilliant stories in the history of modern civilization. It is impossible to get an accurate historical picture of the past without an insight into its hygiene and sanitation. Hygiene can be taught naturally in connection with history without in any way "dragging it in." Its unusual and dramatic stories also teach facts about health that cannot be taught as effectively in any other way.

Fortunately, in the field of historical medicine, popular books are beginning to appear rapidly. Many have been reviewed in this department and at least one is scheduled for this number. Let your summer reading include some popular historical reading in the field of hygiene and medicine. It works itself in easily in either history or hygiene classes.

TEACHING HEALTH

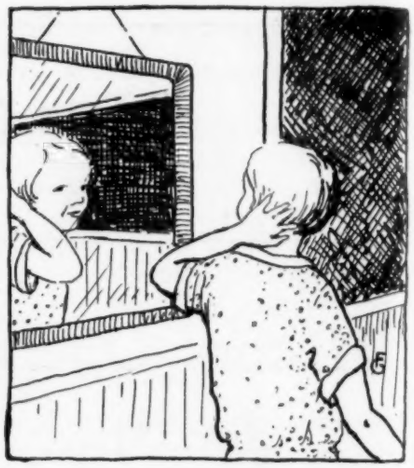
(In this column will be published each month concrete examples of good health teaching. Teachers are invited to send in contributions not exceeding 600 words and preferably less to the editor of this department. Illustrations of the actual work of children will be welcomed. Contributions accepted will be paid for but no manuscripts will be returned.)

THE DENTAL HEALTH PROGRAM AND THE PUBLIC SCHOOL

THE PROBLEM of dental health has influenced school attendance and school progress for years. It is definitely a school problem. What can the classroom teacher do about it?

Three objectives of health education touch the problem of dental health. Through school activities planned in the light of these objectives, the classroom teacher may give valuable assistance.

The first objective has to do with the standards and practices of personal hygiene, specifically with those dealing with cleanliness and care of the teeth. Standards of mouth cleanliness and of care of the teeth differ in children as they do in adults. These individual differences should be taken into account. Standards must be built on progressively higher levels throughout childhood and early adulthood. Through sympathetic guidance, the understanding teacher can aid the child in raising his own standards and in living in accordance with them.



One teacher found that a mirror placed in the schoolroom could be used to advantage in encouraging self inspection. Through her wise use of the situation she led the children to higher and higher standards of cleanliness. An occasional suggestion offered privately helped many a boy to see the desirability of raising his standard. Questions on the "how" of cleaning teeth and the "how" of care of the toothbrush were encouraged by this teacher, who was ever alert to guide each child toward a standard a little higher than his present one. The same teacher used the same mirror to guide the same group of children to recognize 6-year molars, their importance and the need to watch over them as the key teeth to dental health.

The second objective of health education has to do with the proper use of professional health service. Most children need to be helped to recognize the dentist as a friend. They need to be helped to assume a responsibility that is rightfully theirs—that of accepting dental service. Fear of the dentist will fade away under the guidance of a wise teacher. Two recent incidents show how this can be accomplished.

Tom, a nervous youngster, had a terror of the dentist. He was badly in need of dental care, but no amount of coaxing or scolding on the part of his mother could induce him to go to the dentist alone or to stay in the dentist's chair when taken there. His teacher took the matter in hand. She led Tom to understand that going to the dentist was one of the situations in life that must be met. She and Tom visited the dentist after school. The next week Tom reminded her on the day of their appointment. Thus one ghost of fear was laid low.

In a southern state, the state board of health maintains a traveling dental clinic for the schools.

Before the time arrived for the clinic to visit a given county, the teachers of one school began to plan for the best educational use of the clinic. For many of the children the clinic would furnish the first contact with a dentist; for others, there were misunderstandings and misconceptions to be dispelled; for all, there was an opportunity for learning, for coming into contact with new ideas and for an experience that would influence the future use of dental services. The school as a whole approached the problem, made a study of it and prepared for the coming of the clinic.

Such questions as the following were raised, studied and settled by the children: Why is the state sending this dental clinic to us? What will it do for us? What should we know before it comes? What should we do to get ready for it? How can we get the most help out of it when it is here?

The result was that when the dentist came, anticipating unpleasant experiences with nervous, frightened, ill informed children, he was met by children glad to see him, ready for whatever experience the dental chair might offer and bubbling with questions that kept him more than busy. He reported that never in his years of experience with school children had he met such wholehearted, intelligent cooperation.

The third objective of health education to touch the problem of dental health has to do with the scientific information on dental nutrition. During recent years, researches in the scientific fields have contributed such facts as the following: Calcium is needed by the body for the building of strong teeth and can best be used for that purpose when it is found in combination with phosphorus. Milk is the most easily available source of calcium, and a quart of milk a day will furnish the needed amount of calcium for a growing child. The body can use calcium to better advantage in the presence of vitamin D, but the body can make its own vitamin D if the skin is exposed to the direct rays of the sun every day. During the months from December to March, when the direct rays of the sun are not easily available, an egg yolk a day will furnish the needed amount of vitamin D. Vitamin C, needed by the body if dental decay is to be prevented, is furnished by orange juice and by tomatoes raw or cooked.

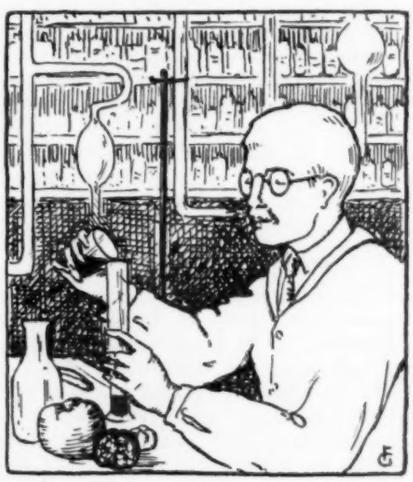
It is the responsibility of the school to interpret to the child on his level of comprehension such facts on dental nutrition as he can use and to encourage, through classroom experiences, the use of foods essential for his dental nutrition. In one school, orange juice is sold just before school closes in the afternoon. In another, the milk habit is a problem only in individual cases, and the school serves tomato juice at the midmorning lunch.

ANETTE M. PHELAN,
Teachers College,
Columbia University,
New York City.

A UNIT IN HIGH SCHOOL CHEMISTRY—THE CHEMISTRY OF HEALTH

TO INTRODUCE the chemistry of health, questions such as the following should be asked: What are some of the causes of human sickness? Why do some people become ill more often than others? Have you ever read that sickness was caused by demons and evil spirits? Have you ever visited a hospital? What did you see that attracted your attention? Why do medical schools require students to take chemistry? How can the human body be compared to a chemical laboratory?

The human body requires certain chemical elements to give power for its operation and replacement of parts that have broken down during its activity. The elements that are required for the body are carbon, sulphur, sodium, potassium, calcium, iron, copper, zinc, aluminum, hydrogen, oxygen and iodine. Along with these elements the human body requires chemical substances known as vitamins, which aid in the chemical action of the body and in resistance to disease.



Much sickness comes from poisons produced by bacteria, which act in different parts of the body. When bacteria attack the body, the system at once puts up a fight and starts making chemicals or antitoxins to destroy the bacteria or to neutralize the toxins of the bacteria. If the body is not able to produce these chemicals fast enough or in large enough quantities, the doctor should be called. He will diagnose the case and give the correct animal serums or antitoxins, which are stronger than the sick person can manufacture.

It is of much importance that the teeth should be sound and strong, for they improve the appearance, aid digestion and safeguard health.

The general theory of the cause of decay states that decay is brought about (1) by improper foods and (2) by acids produced by bacteria which live in an unclean mouth. The acid produced by bacteria causes an erosion of the enamel, and this action leads to a general breakdown of the teeth. The commonly accepted principles for the prevention of decay are (1) to eat proper foods containing minerals and vitamins and (2) to clean the teeth often in order to prevent the growth of bacteria.

Foods are classified by chemists as follows: (1) carbohydrates, such as sugars and starches, which give heat and energy to the body; (2) proteins, such as meats, cheese, eggs and legumes, which build and repair the tissues; (3) fats, such as butter, lard and oils, which provide heat and energy.

Good health depends a great deal on the quality and quantity of foods. The proper proportions will depend on the work of the person, his age and the climate.

The body is constantly calling for oxygen; health and comfort depend a great deal on the chemistry of respiration. Oxygen is taken into the lungs, absorbed by the blood and carried to every organ and cell in the body; it aids in cell action and also oxidizes the waste material produced by the cells. If there is any interference with this action, the vitality of the body is at once lowered. This explains why fresh air and exercise derived from outdoor work and play are so indispensable.

In the direct application of chemicals in medicine, insulin is used for relief in diabetes, and iodine for the prevention of goiter. To promote clearness, chemicals are given before x-ray pictures are taken. Chemical indicators are used to ascertain the acidity or the alkalinity of the blood. Ether and ethylene are used as anesthetics. Dakin solution (surgical solution of chlorinated soda) is used in almost every hospital as an antiseptic. Many other chemicals could be named that are prescribed as medicines.

Laboratory work may include tests for various foods, examination of bones for mineral matter and a display of x-ray pictures in which chemicals have been used in making distinct pictures.

FRED T. HART,
John Marshall High School,
Chicago.

A STUDY OF THE ELIMINATION OF BODY WASTES

CONSTIPATION has been called the "great American disease" and the "ailment of millions," and manufacturers of its remedies and so-called cures continue to reap large profits because of the ignorance of the "ailing millions." In the past years there has been a hesitancy to speak of such things as constipation or elimination before a class of boys and girls. Now increasing numbers of teachers realize that this hesitancy is unwarranted, provided the subject matter and vocabulary are carefully chosen and the lesson development is educationally sound.

Definite Need for Instruction

Children are not usually conscious of the discomfort caused by lack of a bowel movement, unless there is pain; and certainly they do not understand or appreciate the health aspects of regular elimination. Therefore they do not feel the need of any instruction on this subject. For this reason the teacher who wishes to influence her class toward better habits of elimination must seek a suitable approach to the subject—one that can be fully understood by the pupils. This approach should be so natural and unrestrained that there will not be the slightest hint of any embarrassment on the part either of the teacher or of the children. The development of the lesson must follow in both a logical and a psychologic manner so that the children not only understand but are convinced of the necessity for regular elimination. When they are convinced of this necessity they are quite ready to learn ways to aid elimination.

After several types of lessons were tried, the one indicated in this article was drawn up as a general guide for elementary teachers of the fourth, fifth and sixth grades. While it is outlined for two lessons of twenty-five minutes each, it may require three or four lessons. This will depend on the age and mental ability of the class, the interest and questions of the pupils and the teacher's method of presentation. The main steps include (1) developing in the pupils the awareness that there is usually some waste portion of every food which is not eaten and explaining the consequences when this waste is not removed from the house; (2) developing in the pupils the awareness that the body cannot use all parts of every food eaten and explaining the consequences when this waste is not removed from the body, and (3) leading the pupils to find ways of helping the body to remove waste material.

The object of the first lesson is to influence pupils to develop regular habits of elimination. The subject matter deals with the reasons for regular habits of elimination and the methods of securing regular habits of elimination. The materials which the teacher will need include a bunch of celery, carrots, fresh peas in the pod or corn in husks, a few potatoes, a paring knife and a mimeographed sheet for each pupil.

The teacher first shows the vegetables to the class and asks what must be done to these vegetables before they can be eaten. (Probable answers will be to clean them, pare them, cut off tops, and cook them.) The pupils then cut away the waste parts of the vegetables. What is done with the parts that are not eaten? (They are thrown away or put in the garbage can.) Why is it necessary to have these waste parts taken out of the kitchen? (Because they may decay, rot, spoil, or produce bad odors.)

The teacher then explains that there is generally some waste from foods before they are eaten and that in the same way there is usually some waste from foods after they are eaten. The stomach prepares the food for the body; the food is then passed into the small intestine, where the good part is absorbed and the waste passed on to the large intestine and out of the body.

If the waste part of food is allowed to remain in the body, it is similar to allowing garbage to remain in a kitchen. What happens to garbage if it is kept a few days? (It spoils, decays or rots.) What happens to waste food kept for a few days in the body? (It spoils, decays or rots.) Just as decaying garbage makes a kitchen unpleasant, so decaying waste makes our bodies unpleasant. It makes us slow and sluggish. It takes away our energy. Sometimes it causes headaches. It interferes with general bodily well being.

Habits of Body Elimination

How often should the waste substances pass out of the body or be eliminated? (One, two, three times a day may be suggested; but the fact should be brought out that one elimination a day is absolutely necessary. Two or three are all right for some persons but are not necessary for every one.)

The teacher writes on the blackboard the topic, "What can be done to help the body eliminate waste to avoid constipation?" She distributes mimeographed sheets containing the following points:

1. Be regular.—Visit the toilet at least once a day, preferably after breakfast, for a bowel movement.

2. Drink water.—Most persons drink too little water. Six glasses a day is the minimum; eight is better.

3. Eat proper foods.—Vegetables, fruits and whole grain cereals contain bulk and minerals which help elimination.

4. Exercise.—Suitable diet and proper exercise can often cure an obstinate case of constipation. Walking is a splendid exercise. Abdominal muscles and organs need special exercises.

Various pupils may read the rules to the class and a short time may be allowed between the rules for the pupils to read the explanations silently. The teacher then asks questions concerning the rules.

If time permits, the pupils may complete the following sentences, which have been written on the blackboard:

1. Waste should be eliminated from the body at least ——— every day. (once).

2. Everybody should form the ——— of regular elimination. (habit)

3. Drinking water aids ———. (elimination)

4. Waste substances kept in the body ——— like garbage. (decay, spoil, rot)

5. Constipation takes away our ———. (energy or feeling of well being)

Certain Foods Are Valuable

In the second lesson, the foods and exercises which aid elimination should be studied. The following materials may be used: real fruits and vegetables or pictures of these; empty boxes used for whole grain cereals, and line drawings on the blackboard to show the exercises. The problem of the last week should be reviewed. The attention of the children is then directed to the collection of fruits, vegetables and cereal boxes. One pupil reads from the mimeographed sheet rule number 3 of last week's lesson. If these are helpful foods, are all the foods listed on the board correct? The pupils cross out the names of foods that do not help elimination. Cereal boxes are then displayed and the pupils name each by reading the label. The teacher may discuss the various cereals and suggest the use of a little brown sugar on oatmeal or farina.

The pupils name the fruits and vegetables and are told that those most helpful in elimination are prunes, oranges, grapefruit, raisins, cabbage, carrots, celery and spinach.

Considering the body as divided into two parts, upper and lower, which part should be exercised to aid elimination? (Pupils will probably answer lower part.) The lower part is the abdomen; the muscles are called abdominal muscles, and the stomach, liver and intestines are

called abdominal organs. It is the lower part of the body, or the abdomen, that needs exercise to help elimination. Line drawings on the blackboard illustrate various exercises, and a part of the next gymnasium or play period may be used for demonstration and practice of these exercises.

LILLIAN B. DAVIS,
Baltimore, Md.

NEW HEALTH BOOKS AND TEACHERS' MATERIALS

SEVERAL brief histories of medicine have been published within the last few years. In "The Story of Medicine," [1] beginning with the striking words on the first page —"The first cry of pain through the primitive jungle was the first call for a physician"—the author carries the reader along devious routes over seas, mountains, rivers and through strange lands that tell unusual stories of sickness, death, heroism and conquest.

These stories of the long ago begin with the stone age. The records are obscure but there is evidence to show that disks of bone were removed by trepanation for headaches, epilepsy and blindness. The chief perforation was to give the confined demon a chance to escape.

"Let us not regard paleolithic man with contempt," says Dr. Robinson. "We are heirs to centuries of science, and as we think of modern man's absorption in war, of the grade of intelligence exhibited in political campaigns, of the various religious cults which sprang up within recent years, of the quality of publication with the largest circulations, of the seances of spiritualists in all countries, of the numerous individuals who earn a living by reading palms and casting horoscopes, we have little reason to be boastful."

In Dr. Robinson's volume the teacher of history may dig interesting and unusual material for his lessons, and the instructor of hygiene may find the novel generally inspirational.

THERE has never before been a time when ideas on the subject of food and dental hygiene have undergone such rapid changes as they are now undergoing. Therefore this bulletin, "Food—the Teeth —and Health," [2] issued by the department of health and the board of education of New York City is especially timely. It should be of real assistance to all teachers.

MENTAL deficiency is one of the most important problems of the modern state, and modern psychology is gradually bringing to bear on it heavy artillery. "The Mental Defective" [3] is a creditable volume but has nothing new to offer on the subject of feeblemindedness. Since it is written from the point of view of English writers, it is not always applicable to American conditions.

THE Children's Charter of the White House Conference of 1930 proclaims "for every rural child as satisfactory schooling and health service as for the city child, and an extension to rural families of social, recreational, and cultural facilities." It is in keeping with these principles that this important practical booklet, "Rural School Nursing," [4] has been made available for Red Cross public health nurses in rural schools. The book is literally jammed with practical suggestions, but it is written specifically with a view to the needs of the school nurse who is working single-handed in rural communities. This valuable outline should be in the hands of every rural school nurse. It could also be read and studied with profit by rural school teachers.

EVERY one has a keen interest not only in his own achievement but also in the accomplishments of others. Dr. Pitkin, who has a national reputation as a popular writer of psychology, maintains his previous high standards in this unusual volume, "The Psychology of Achievement." [5] The book contains splendid stories of individual achievement that every teacher should be able to use effectively in courses in hygiene.

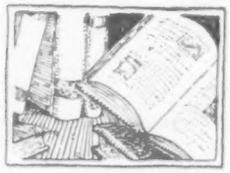
ONE of the most dramatic episodes in the history of health education within the last decade has been the movement of community health demonstrations carried on by the Commonwealth Fund under the leadership of Courtenay Dinwiddie. In a well written volume, "Child Health and the Community," [6] he tells briefly about the demonstrations made in four rural or small city communities. The book is in general a review of other larger volumes on these individual community demonstrations but has the advantage of presenting a general philosophy of such an undertaking. The brief but meaty outline of the program in the appendix is excellent. High school teachers of health and teacher training classes would find this book invaluable in showing some of the actual conditions found in America today and how they may be improved.

IN THIS time of financial depression and world unrest we need a practical social psychology, but one studies this volume, "Experimental Social Psychology," [7] in vain for such suggestions. This is due in part to the fact that social psychology is still much in the making, and in part to the reluctance of the authors to attempt, except incidentally, to suggest practical applications. Each chapter is a general summary of the studies and experiments in a particular field, but, after wading through all the details and statistics given, the reader wonders what it all really means in terms of controlling individuals and society. As a mere history of the many experiments in social psychology it is a masterly work and should be invaluable for reference.

SCIENCE has had to fight its way inch by inch in the face of magic and superstition. Primitive man imagined the world to be inhabited by supernatural beings. Some of them were good and some were evil. The rustle of the wind in the trees or the rumble of distant thunder might be signs of spirits or the voices of angry gods. Disease was thought to be due to evil spirits. Prayer or sacrifice it was thought might appease such spirits, or magic would counteract their influence. Since we recover spontaneously from many disorders and other conditions are helped by suggestion, such beliefs and practices are kept alive.

This bulletin [8] gives some interesting information about the superstitions that have arisen in the past and are still believed by people today. Red flannel, for example, is believed to relieve sore throat if tied around the neck. Although magic and superstition seem to be disappearing rapidly there is a substitute in the credulity of people today in regard to "patent medicines." Most proprietary medicines are either useless or harmful, yet in one rural county, says this bulletin, it was found that about one third of the money spent for the care of illness was spent on such drugs. Magic medicine advertised by newspapers should be avoided.

1. By Robinson, Victor, M.D. Price, $5. Pp. 527. New York: Albert & Charles Boni, 1931.
2. New York: Department of Health and Board of Education, 1932.
3. By Berry, Richard J. A., and Gordon, R. G. Price, $2.50. Pp. 225. New York: McGraw-Hill Book Company, 1931.
4. Price, 50 cents. Pp. 151. Washington, D. C.: The American National Red Cross, 1931.
5. By Pitkin, Walter B. Price, $3.50. Pp. 500. New York: Simon & Schuster, 1930.
6. By Dinwiddie, Courtenay. Price $1. Pp. 80. New York: The Commonwealth Fund.
7. By Murphy, Gardner; and Murphy, Lois Barclay. Price $3.50. Pp. 709. New York: Harper & Brothers, 1931.
8. Health Superstitions; Health Bulletin for Teachers, number 22. Pp. 4. New York: Metropolitan Life Insurance Company, June, 1931.



New Books on Health

THE LAME, THE HALT AND THE BLIND

By Howard W. Haggard, M.D. Cloth. Price, $4. Pp. 420, with 200 illustrations from original sources. New York: Harper & Brothers, 1932.

THIS BOOK is a companion volume to the author's recent publication "Devils, Drugs and Doctors" and is a worthy one. As the previous work treated particularly the evolution of medicine from magic to science, so this volume deals with modern medicine and what it can do for the average citizen.

It is written in Dr. Haggard's vigorous, colorful, interesting and humorous style. There is a persistent return in the book to what might be called its basic theme—that before we scoff too loudly at the medical foibles of other days we had perhaps best look a little more critically at our own follies. Writing of the divine Cagliostro, superquack and ancestor of the modern quacks, Dr. Haggard points out that the methods of medical knavery change, but human credulity remains unaltered.

Referring back briefly to medicine's place in history, which was treated in "Devils, Drugs and Doctors," he uses over again some of the material from the former book, but it is matter that well bears repetition. Under the heading of "Medical Amateurs" he deals with medical logic, the power of sympathy, quackery and the tendency of every man to offer his own ideas for the treatment of others. Following this, under the general title of "The Humanitarians" are chapters on Florence Nightingale, hospitals then and now, the difference between culture and education, and Dorothea Dix. In the same section, under the satiric title of "Mother America," he deals with maternal mortality and, unfortunately, falls into the prevalent error of holding America up to scorn by comparing her maternal mortality statistics with those of other nations, a fallacy which has previously been demonstrated in HYGEIA.

Turning then to the "great mortalities," he writes fascinatingly of tularemia, rabies, typhus fever, the black death, the dancing mania, smallpox, vitamins and oxygen. Seven chapters are devoted to tuberculosis and its relationship to such interesting but divergent personalities as John Evelyn, Charles II of England, Edward the Confessor, René Laennec, Robert Koch, Robert Louis Stevenson, Wilhelm Konrad Roentgen and Percival Potts. Dr. Haggard's ability to present medical progress in a series of glowing pictures of those who made it gives his book the spark of life and a fascination which holds the reader to it from the moment he glances at the first intriguing woodcut until, regretfully, he reads the last word.

The illustrations, some of which have previously appeared in "Devils, Drugs and Doctors," add greatly to the interest of the book. Every medical writer and every teacher of health should have it as a reference work. Laymen will get a new conception of medicine, quackery, health, disease and human credulity from it, and doctors will find in it many a quiet chuckle and much food for serious thought.

W. W. BAUER.

THE MASTERY OF SEX, THROUGH PSYCHOLOGY AND RELIGION

By Leslie D. Weatherhead. Price, $2. Pp. 246. New York: The Macmillan Company, 1932.

THE AUTHOR prefaces his book with statements by ministers and physicians, and he is himself a wearer of the religious cloth. His work has apparently taught him the importance of sex in spiritual problems; he writes to be of practical help to those who are religiously inclined and who torture themselves because of their fears concerning sex life and religion. As evidence of the attitude with which the author writes, he emphasizes the fact that he does not consider masturbation either a sin or a mistake. It is to him merely the nonbiologic use of a part of the body for the purpose of obtaining enjoyment. Mr. Weatherhead has apparently cured many of his parishioners of sexual aberrations through psychologic and religious instruction and through recommendations regarding sex hygiene and medical consultation. As a contribution to the field in which the physician and the religious teacher work simultaneously, the book by Mr. Weatherhead may be considered exceptional.

MORRIS FISHBEIN.

MY PARENTS: FRIENDS OR ENEMIES?

By Arthur Frank Payne, B.S., Ph.B., M.A., Ed.D. (Harvard). Cloth. Pp. 278. New York: Brewer, Warren & Putnam, 1932.

THE AUTHOR of this volume is a psychologist who has popularized his subject even to the extent of speaking regularly on the radio. Much of the material in this book covers the questions raised by his listeners. He analyzes the various types of love that parents have for children and teaches thereby the difference between true parental love and the various attitudes which frequently result in "spoiling" children. He has perhaps been unduly impressed by the freudian conception of complexes and is inclined to fear too intimate relationships between fathers and daughters, mothers and sons.

In additional chapters he considers the way in which parents suppress the children and turns next to the secret sex life of the children. Mr. Payne believes that mothers and fathers should tell children the whole truth in a simple manner, cautioning the children against possible evils but never placing too much importance or emphasis on the subject.

He believes also in telling a child as soon as he asks the truth about the biblical legends and miracles. Notwithstanding the psychoanalytic emphasis in this book, the vast majority of the author's statements are simple, wise recommendations which every teacher, mother and father may well follow for the benefit of the children placed in their care.

M. F.

THE FINE ART OF LIVING

By Daniel S. Sager, M.D. Cloth. Price, $2. Pp. 215. Philadelphia: Dorrance & Company, Inc., 1932.

THIS BOOK affords a brief consideration of diet; it emphasizes the desirability of vigorous chewing of food; it urges the eating of raw foods in contrast to cooked foods; it argues that mankind eats too much animal food, and it inclines to favor vegetarianism. The reviewer proceeding thus far failed to read the rest of the volume since it cannot be recommended as a sound book in this field because of the distinctly faddistic leaning already mentioned.

M. F.

QUESTIONS and ANSWERS

Raynaud's Disease

To the Editor:—What is the cause of Raynaud's disease? What are the symptoms? What treatments are used? What is the prognosis?

H. S., Iowa.

Answer.—Raynaud's disease consists of a change in the caliber of the blood vessels, without the occurrence of organic disease. It is seen chiefly in the extremities and is attended with persistent lack of blood or with passive congestion, leading to disturbance of function of the part or to loss of vitality with necrosis or death of the part. This disease is comparatively rare. One study of 2,000 sick persons revealed only nineteen cases, 60 per cent of which occurred between the ages of 10 and 30. Several members of a family may be affected. Neurotic and hysterical patients are more liable to suffer, and damp or cold weather appears to favor the occurrence of the disease. Chilblain leading to superficial necrosis represents a type of the malady.

The cause of this disease is unknown. The local lack of blood is due to the contraction of the smaller blood vessels, causing spasm of the arteries and arterioles so that not a drop of blood enters a part. This may be followed in an hour or two, or less, by active congestion; the arteries and arterioles dilate widely, and the dead-white finger becomes a bright pink. This is usually followed by an interval after which the finger becomes blue.

The symptoms of this disease may be mild, moderate or severe. Chilblain is an example of the milder form. A moderate form is sometimes liable to follow a period of worry or ill health. The patient has pains, numbness or tingling in the fingers; then he notices that they are white and cold, and in an hour or so they become red and hot. Within a day or two, a change occurs; they remain permanently blue perhaps as far as the second joint or the knuckles. The pain is sometimes severe enough to require the use of drugs. The blueness persists, the tip of one finger or the terminal joint of another gets darker, and blisters appear. The other fingers show signs of restored circulation, but necrosis has occurred in the pad of one finger and perhaps the terminal inch of another. The necrotic parts gradually separate, and the patient may never have another attack, or in a year or two there may be a recurrence.

The severe form of Raynaud's disease is truly a terrible malady; it may affect the toes and fingers at once, and sometimes the tip of the nose and the ears. The pain is of great severity. Both feet may be swollen to the ankle, with the toes black. It may seem as though both feet will become gangrenous, but as a rule the process subsides and in a case even of great severity, only the tips of the toes are lost. A severe attack may last for months, the patient finally recovering with the loss of two or three fingers or toes, a snip off the edge of both ears and a scar on the tip of the nose.

In some cases of this disease there are complications. The diagnosis is usually easy. As to treatment, in many cases these attacks occur for years, uninfluenced by treatment. When the feet are involved, the patient should be kept in bed with the feet elevated and wrapped in absorbent cotton. Various drugs have been tried, sometimes with success.

Denton's Facial Magnesia

To the Editor:—I should like to know whether Denton's Cremed Facial Magnesia is suitable for removing blackheads and for relieving excessive oiliness of the skin.

H. H., Iowa.

Answer.—The Bureau of Investigation of the American Medical Association states that Denton's Facial Magnesia was analyzed in 1929 and reported to be essentially a mixture of epsom salt and soap. As such it might have some merit as a skin cleanser, but some of the advertising claims that have been made for it are preposterous.

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed. Anonymous letters are ignored.

Itching in Diabetic Patient

To the Editor:—My wife has had diabetes for several years and, of course, has been under a doctor's care during that time. She also has a terrible itch. We have changed doctors several times and while they all keep her fairly well and largely sugar-free through the use of insulin, none of them seem able to relieve this itch.

C. E. I., Illinois.

Answer.—Assuming that there is no skin lesion, generalized pruritus, or itching, in a diabetic patient can nearly always be relieved by keeping the blood sugar normal; absence of urinary sugar is not sufficient.

If the patient is taking insulin, a weighed diet is necessary.

If the skin is dry, cocoa butter, olive oil or lanolin should be applied. If the skin is apparently normal, any antipruritic preparation, such as calamine lotion, will be helpful.

Arteriosclerosis

To the Editor:—What symptoms should the patient have noticed prior to becoming afflicted with arteriosclerosis? Are the causes of arteriosclerosis in middle aged patients definitely known to medical science?

G. T., California.

Answer.—Arteriosclerosis is a condition which normally, to a certain degree, comes with age. When the blood vessels become changed in character and lose their elasticity more rapidly than the normal average in reference to age, the result is an abnormal or a diseased condition. The causes of this more pronounced form of arteriosclerosis are not well known. Frequently it is seen in syphilis; also there is often a history of infectious disease, though to what extent these infections are responsible for the changes in the blood vessels is often difficult or impossible to determine.

In many cases, arteriosclerosis of quite marked degree does not give rise to any symptoms and is discovered only after death. In others it is possible to note the change in the more superficial vessels, such as the radial artery in the wrist (pulse), the brachial artery on the inner side of the arm, the femoral artery in the leg, the temporal artery in the skull, and the vessels of the iris or eye-ground.

Underweight; Varicose Veins

To the Editor:—A recent issue of HYGEIA carried an article on fat people which was interesting even to thin folks. Now can you tell us thin sisters the possible reason for this persisting condition? We do not eat too much, and we seem to eat enough. Why do thin folks keep thin? Have any theories or facts been developed that might be of help in gaining weight? Will you be kind enough to give some information about veins? I have always had very prominent veins on the hands and arms, especially noticeable, of course, when my arms are in a dangling position. Now, at the age of 34, the veins in my legs are getting quite noticeable. About two years ago, I first began to notice this, when a portion of vein, about 1 inch in length, near the ankle, on the back of the leg, began to bulge slightly; there is sometimes a feeling of pressure. At present this condition does not in any way incapacitate me, but I fear that it may if it continues to get worse as I grow older. My physician said this condition sometimes appears when one loses weight, but I have lost little or no weight for some years. I hesitate to seek the advice of another physician, not knowing whether it is worth while, in case nothing can be done. Can something be done to arrest further progress of this condition? Is this one of the diseases that has its beginning in heart and artery trouble, or is it a disease of the veins only, not caused by heart or arteries? Since this trouble seems to be in the developing stage, cannot its progress be checked? What happens to these bulging veins? I also have a hernia. Does this indicate a general weakness of certain body structures, including veins and arteries? Will you be kind enough to tell me whether shooting pains above the right shoulder blade, in an elderly woman with angina pectoris, could be a result of this disease? If so, is this a general symptom, or a late symptom which cannot be alleviated? B. W., Illinois.

Answer.—It is not possible to give the best kind of advice about increasing one's weight, in the absence of a personal examination. We published an article entitled "How To Gain Weight," which the inquirer might find helpful. This is described in our catalog and is sent to any one on receipt of an order accompanied by payment.

The tendency to be fat or slender is largely inherited, though most persons who are overweight can make a material reduction in their weight by proper habits of diet, exercise, and the like. It is not so easy to gain weight. If one is much underweight an examination should be made to make sure that there is no organic trouble present which is responsible for the condition.

There is a decided family tendency to varicose veins. It is not likely that the condition noted in the arms and hands will be of any serious import to the inquirer. Large veins in the legs do tend to become larger. When they have reached a certain prominence it is well for one to wear an elastic bandage or stocking and, if they become very pronounced, to have an operation performed. Whether there is any relation between underweight and this condition of the veins we are unable to say. The condition of the veins is not necessarily associated with any abnormality of the heart or arteries. It is difficult to say whether or not there is any relation between the weakened abdominal wall and the large veins. In most cases there is no discoverable connection between the two.

Stomach Trouble

To the Editor:—I am a girl, aged 17, an age when I should be healthy and happy, though I am not. I think the trouble lies in my stomach. It doesn't ache but it does not seem to move, to be alive. Neither does there seem to come out as much as I eat. Is this tapeworm, or what? How can I remedy this? Another point I should like to know is regarding the position of one's stomach. If it is large, as mine is, should I just force myself to keep it in, which is hard to do, or shouldn't it be large? How can I get mine smaller? My bowels do not move regularly though I drink hot water and walk much every day. Can you suggest a home treatment for me? M. T., Texas.

Answer.—The description of the condition is too indefinite to enable us to arrive at any conclusion as to what conditions really are present. The meaning of the phrase "the stomach does not seem to move" is not clear. A normal individual is quite unconscious of any movement of the stomach. It certainly is not a sign of tapeworm. The inquirer describes the stomach as large, probably meaning that the abdomen protrudes. This may be due to faulty posture. The proper exercises will do much to correct this. As to bowel movement, almost any individual can secure regular daily bowel movement once or twice each day by eating easily digested food, with a reasonable amount of roughage such as vegetables, fruits, coarse breads and cereals; by exercise, preferably outdoors; by drinking water freely, and especially by cultivating a habit of going to the toilet at the same hour each day whether or not there is any inclination to do so.

Tooth Paste

To the Editor:—Please send me information concerning the purity of tooth pastes, tooth powders and mouth washes. Also include any available material dealing with the advertising of dentifrices.

D. D., Wisconsin.

Answer.—Until recently it was difficult to get from manufacturers a statement of the contents of tooth pastes and tooth powders. However, lately the American Dental Association established a council on dental therapeutics to examine the composition and claims of articles of dental usefulness. These articles, besides including active medicaments for use by the dentist, include dentifrices and mouth washes.

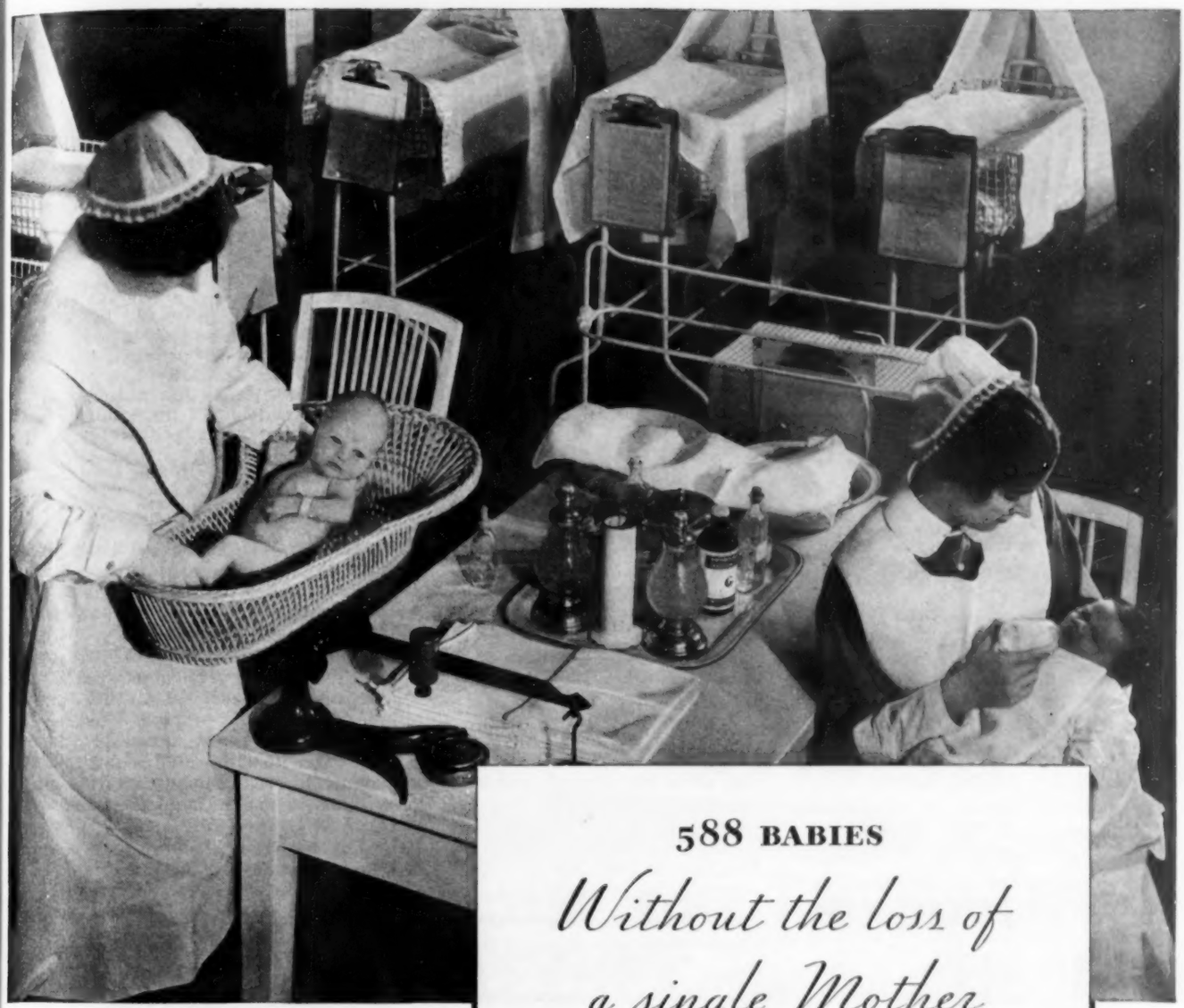
Those manufacturers who agree to comply with the provisions of the council for the acceptance of dentifrices have submitted the composition of their products to the council and have agreed to limit their advertising to the following definition of the council for a dentifrice: an agent which may aid the tooth brush in cleaning the surfaces of teeth. Beyond this the toothpaste has no further function.

It is a truism that needs no debate that the quality of goods is in a general measure inversely proportional to the blatancy of the advertising. In the case of tooth pastes, those who advertise their tooth pastes as a cure for gum disease or tooth disease make up in false claims what their tooth pastes may lack. This type of advertising should be discouraged through purchase of a dentifrice which is advertised honestly.

Articles on the advertising of these products and their effect on the consumer have appeared. The most popular of these are "The Dentifrice Racket" by Catherine Hackett in *The New Republic* (Jan. 15, 1930) and an article entitled "Tooth Pastes and Tooth Paste Advertising" by Dr. Samuel M. Gordon and Dr. Paul Nicholas Leech which was published in *The Chemical Bulletin* of the Chicago Chemical Society (April, 1931).

The functions of a mouth wash are extremely limited. The mouth wash may be considered to be of use only in leaving a temporarily pleasant taste in the mouth. Mouth washes will not cure disease, and they cannot be considered as useful prophylactic agents.

One formula for a mouth wash which is as good as any on the market may be made by adding to 1 pound of household salt, 15 grains of menthol and 12 grains of saccharine for sweetening. One-fourth teaspoon of this mixture to one-half glass of water is said to make a satisfactory mouth wash.



588 BABIES
Without the loss of a single Mother

The Woman's Hospital of Baltimore attained this high standard in 1930

NEW LIFE without sacrifice of life! In 1930, in the Woman's Hospital of Baltimore, 588 women safely passed through the ordeal of childbirth.

The only hospital exclusively for women south of Mason and Dixon's line, the Woman's Hospital of Baltimore has been a pioneer in many fields. It was one of the first hospitals to use the powerful new antiseptic, Hexylresorcinol Solution S. T. 37 (1:1000) and has continued to use it ever since. Large quantities are always kept in the Pharmacy.

• • •

The active ingredient of Hexylresorcinol Solution S. T. 37 is 70 times more powerful than carbolic acid in germ-killing power. Yet Solution S. T. 37 cannot irritate the tenderest tissues.

Even if a tiny newborn baby swallows it when his mouth is being cleansed, it will not harm him. It can be poured directly into open wounds without smarting or burning.

Hexylresorcinol Solution S. T. 37 brings to you and your family a wonderful new safeguard against the hidden dangers of infection. Laboratory tests show that even when diluted 3 times it kills disease germs almost instantly on contact. It should be used twice a day as a mouth wash and gargle.

Keep Solution S. T. 37 where the children can reach it. It has a mild pleasant taste and will not discolor the skin or stain clothing. Get a bottle of Solution S. T. 37 today.

Prepared by a pharmaceutical house of recognized standing with the medical profession. On sale at all druggists in the United States and Canada. 50¢ and $1.25.

Made by
SHARP & DOHME

HEXYLRESORCINOL SOLUTION S.T. 37

A Lesson in Life Saving

© 1932 M.L.I. CO.

"Let us show you one of the best ways to carry a man who needs help. You can learn how on the pier or the beach and then practice in the water. You'll find this and other 'carries' in the Metropolitan's booklet 'Swimming and Life Saving'."

OUT beyond the paddlers and bathers who cannot swim a stroke, you will find the strong swimmers who get the most joy out of clean, sparkling water. But swimming is more than a keen pleasure. It offers more opportunity for wholesome exercise for more people than any other sport.

Almost everybody who has correct instruction can learn to swim. When you swim you exercise practically every muscle in your body. You take deep breaths, expand your lungs and send your blood tingling from head to foot. And afterward, when resting in the warm, golden sunshine you soak up health-giving rays from the sun.

You may regard yourself as a fairly good swimmer because so far you have been able to take care of yourself. But if you have not learned to swim correctly you may be unjustified in your confidence. It is not difficult to correct swimming faults or to learn the proper arm and leg action and the breath control necessary in good swimming. Foolhardiness and panic cause more drownings along the seashore and in lakes, rivers and ponds than exhaustion or cramps.

You may be perfectly willing to risk your own life to save that of another. But if you do not know how to go about it there is great danger that both lives will be lost. To save a life requires real skill. Prove whether or not you are competent by carrying ashore a friend who is not helping himself. If you find that you cannot do it, learn the proper life saving methods so that, if ever needed, you will be ready.

The Metropolitan Life Insurance Company, in cooperation with the American Red Cross Life Saving Service, has prepared a booklet which will help you to learn to swim, if you cannot swim now. It shows the American Crawl used by champion swimmers and the proper Side Stroke to use in life saving. Send for your free copy of "Swimming and Life Saving." Address Booklet Dept. 7-G-32.

METROPOLITAN LIFE INSURANCE COMPANY

FREDERICK H. ECKER, PRESIDENT ~ ONE MADISON AVENUE, NEW YORK, N.Y.

Diet

To the Editor:—I have lately read a book about a system of diet, the main principle of which is to avoid mixing proteins and carbohydrates at the same meal. The author claims that proteins need an acid medium for digestion and that carbohydrates need an alkaline medium. Therefore, he says, protein and carbohydrate cannot be digested together, and usually the carbohydrate ferments so as to produce harmful acids. Are these statements facts or fiction? Would following this diet relieve pruritis ani or pruritis vulvae? Could pruritis ani be helped or cured by use of acidophilus (bacteria) culture, the idea being to aid digestion so as to produce less acid feces and reduce irritation? Why is raw milk said to be a better food than pasteurized milk?

H. B., Pennsylvania.

Answer.—There is no basis for the notion that mixing protein and carbohydrates at the same meal is unwise. This is a widespread popular delusion.

Carbohydrates are not digested in the stomach. They pass on into the small intestine where they meet the secretions of the pancreas, which contain ferments that digest all three varieties of foods. Of course, there may be certain individuals by whom some food combinations are not well borne.

Pruritis, either of the anus or of the vulva, may be due to some local cause or to some general condition. Careful examination should first be made to eliminate the possibility of a local condition, such as fissure, fistula, eczema of the parts or some irritating discharge. None of these being found, the general condition of the individual should be diagnosed. Some error of diet may have an influence.

There is no objection to trying acidophilus milk or acidophilus cultures, but in many cases these are not found to be helpful.

As to the question about raw milk and pasteurized milk, it may be said that for some infants there may be certain advantages in raw milk, but under modern living conditions they are usually more than counterbalanced by the possibilities of infection through milk which has not been pasteurized. Many epidemics of diphtheria, scarlet fever, undulant fever, streptococcus sore throat, typhus fever and other diseases have been definitely traced to infected milk.

The sunbath may be considered as a great preservative and curative agent for most persons.—*Dr. Oliver Wendell Holmes.*

MIND AND BODY WORK IN UNISON FOR SUCCESS

"Mind and body cannot be separated. We know that our moods and feelings alter the functioning of various organs, and conversely the functioning of bodily organs influences or colors our thoughts, feelings and moods. Can you imagine the brain or intestinal tract stalking about without the rest of their host? It becomes obvious that we can only appreciate problems of body and mind by embracing the concept that the individual reacts as a total and integrated unit. . . . Mind is the human being in action," is the opinion of Dr. Frederick L. Patry in a recent issue of *The Survey*.

It was not until this theory of integration was sensed that the mentally ill persons were considered sick. Not until recently have the insane been treated sanely; prior to this, the so-called insane were regarded as bewitched, possessed of evil spirits or in accord with those who held power and authority or pleased the multitude. They were considered oracles, prophets or divinely inspired, Dr. Patry adds.

He declares also that success or failure in life depends on four fundamental things: heredity, environment, habit training and habit patterns, and choice and decision patterns. Like all things worth having, mental hygiene is only obtained through effort.

BACKYARD GARDENING WILL FILL THE BILL FOR POOR FAMILIES

Backyard gardening has possibilities of being the popular outdoor sport of 1932. Even within the boundaries of large cities there are thousands of acres of idle land, it is said, on which owners and tenants can grow food that they cannot afford to buy. For this reason, community gardens are being planned in many cities.

Not only will many be able to have more food by having a garden, but in a home where funds are low there is often a serious lack of minerals and vitamins that the home garden can supply.

Fresh peas, snap beans, greens, young carrots, young beets, spring onions, tomatoes, okra, lettuce, radishes and possibly sweet corn would be luxuries to most city families at any time, but they may be grown at small cost in the home garden.

The garden method to obtain low cost diet is advocated by the United States Department of Agriculture.

Use soft, inexpensive

KLEENEX *disposable* TISSUES

HAY FEVER SUFFERERS – don't try to get through another season without Kleenex. Kleenex puts an end to discomfort caused by damp, irritating handkerchiefs. Puts an end to big laundry-bills, too—and to disagreeable washing.

Kleenex is a soft tissue, handkerchief size, gentle, super-absorbent. Use each tissue once, then destroy. You get a big supply in every package. The tissues can be removed easily as needed.

A full package of Kleenex costs no more than *one* inexpensive handkerchief! In fact you can use many of these soft disposable tissues for the cost of merely having a single handkerchief *laundered!*

KLEENEX *disposable* TISSUES

Introduce Kleenex to your family and soon everyone will be using it. For handkerchiefs and a dozen different purposes! Mothers find Kleenex an ideal nursery accessory—as a bib when giving baby his cod liver oil—as an absorbent after the bath—for applying ointments, etc.

And, of course, you will want to use Kleenex to remove face creams and cosmetics, to blend rouge and powder on your face.

All drug, dry goods and department stores sell Kleenex.

'KERFS

...are a formal version of Kleenex...exquisite tissues, smartly bordered . . . nice enough to appear as handkerchiefs or tea napkins.

KLEENEX COMPANY HY-7
Lake Michigan Building
Chicago, Illinois

Please send free trial supply of Kleenex.

Name _____

Street _____

City _____ *State* _____

(In Canada, address: 330 Bay St., Toronto, Ontario)

Germ-filled handkerchiefs are a menace to society!

Convenient Delicious Sustaining

for Summer Use

Now is the season for automobile trips, picnics and summer travelling. No food is more convenient to carry nor easier to prepare for all the members of the family than

Horlick's **THE ORIGINAL**

Malted Milk

ACCEPTED AMERICAN MEDICAL ASSN. Committee on Foods

No cooking—just a moment to prepare, or handy to carry in a thermos bottle.

Horlick's may be mixed with either milk or water. Prepared with water, experiments with Horlick's the Original Malted Milk at a leading University have demonstrated that it not only nourishes and strengthens but actually stimulates the appetite. Prepared with milk, it doubles the nutritive value of the milk and makes a delicious, digestible drink that children require no coaxing to drink.

Horlick's Malted Milk comes also in Tablet form—handy to carry in pocket or bag while hiking or golfing.

HORLICK'S MALTED MILK CORP.
Dept. H-17, Racine, Wis.

Please send me .... weight charts for preschool children and .... charts for school children for recording by a graph the weight progress of individual children.

.....

.....

.....

HITCH-HIKING TYPHOID GERMS FEAR ONLY VACCINATION

For those who shall know the pleasures of the open road this summer comes the timely warning: Beware the hitch-hiking germs.

Dr. R. H. Riley, director of the state department of health of the state of Maryland, advises vaccination against typhoid fever for those who have not been vaccinated within the last two or three years. He adds:

"Typhoid germs are hitch-hikers. They are picked up and spread from person to person by water, milk, flies, fingers, food. Every case of typhoid is contracted by way of the mouth and the digestive system. The State Department of Health and the local health departments can be depended upon to continue their fight against the disease, but there will still be sources of infection that can be warded off only through the protection afforded by vaccination against the disease."

Typhoid germs may be carried from one person to another, and though the carrier may be apparently well after his illness, he may still pass them on to others. Only the most strict personal cleanliness will prevent the disease from becoming actively contagious. Vaccination is the only positive safeguard for the well person.

BLIND PERSONS ARE WISE USERS OF WEALTH IN HEARING

Although the blind are not endowed with more capacity in hearing than those who can see, they acquire better use of the capacity. In other words, the blind are wiser users of their wealth. Jacob Kwalwasser, who has made significant studies by means of nine music tests, maintains that without a single exception the scores obtained by the blind are uniformly higher. In discussing whether the auditory superiority of the blind was attributable to nature or nurture, he maintained that many of the blind students had not been blind for more than five years and therefore were perfectly normal persons during the earlier part of their lives. Although it is extremely difficult to separate heredity from environment, conditions in these instances tended to prove that the blind had capitalized more on their investment; therefore Jacob Kwalwasser concludes in the April issue of the *Etude Music Magazine* that any person is potentially capable of acquiring more auditory and muscular discrimination.

Schools and Camps

Schools and Camps

BROPHY COLLEGE HIGH SCHOOL
Jesuit Fathers, Phoenix, Arizona
Accredited to State University. Classical four years' course, stressing debating, dramatics, character building, religious training. Buildings and equipment new. Campus 25 acres. Location: Phoenix: modern state capital. Climate during school year: dry, bracing, little rain, no fog; clear desert air, wonderful sunshine (84%). Maximum outdoor life; excellent table; athletics for all. **Address: The President.**

FORK UNION MILITARY ACADEMY
Fully accredited. Prepares for college or business. Able faculty. Small classes. Supervised study. Lower School for small boys in new separate building. Housemother. R. O. T. C. Fireproof buildings. Inside swimming pool. All athletics. Best health record. Catalog 35th year. Dr. J. J. Wicker, Pres., Col. N. J. Perkins, H. M. Box H—Fork Union, Virginia.

KOHUT A Boarding School for boys, emphasizing character building, sound scholarship, physical development. 24th year. On Post Road, 22 miles from N. Y. City. Address H. J. KUGEL, Prin., Harrison (Westchester Co.) New York.

Resorts

Big Tim Lodge for Adults
ON LAKE MEMPHREMAGOG
Relaxation and recreation in an informal atmosphere. 450 acres of natural playground. Main lodge and cottages with open fireplaces. Tennis, badminton, fishing and all water sports. For further information write to
MERLIN LIMITED
Georgeville Quebec

Schools for Backward Children

Beverly Farm (INC.) *A Home and School for Nervous and Backward Children and Adults*
220 acre farm. 7 bldgs. New school gymnasium. 35th year. Industrial and school training given. Dept. for birth injury cases. GROVES BLAKE SMITH, M.D., Supt. **Godfrey, Ill.**

<> TROWBRIDGE TRAINING SCHOOL <>
Home school for nervous, backward children. *Best in the West.* Beautiful buildings. Spacious grounds. Experienced teachers. Individual supervision. Resident physician. Enrolment limited. Endorsed by physicians, educators. Booklet. E. Haydn Trowbridge, M.D., 1810 Bryant Bldg., Kansas City, Mo.

Schools of Nursing

ENGLEWOOD HOSPITAL Be a Nurse. Three year course. State accredited. Beautiful nurses' home. Full maintenance and monthly salary. Four year High School course required. For further information, write to Englewood Hospital, 6001 South Green Street, Chicago, Illinois.

NEON GLOW LAMP... for Night Emergencies

A 2-watt Neon Glow Lamp means safety—time saved. Left lighted every night—current costs only a few cents a month. Lasts thousands of hours. Buy it at your local electrical dealer's or write us for folder. General Electric Vapor Lamp Co., 845 Adams St., Hoboken, New Jersey.

58 TONS *of* FOOD *become* BLOOD *and* BONE

THIS is the task that faces the gastro-intestinal tract, for it has been estimated that the average span of life is fifty-eight years and that more than a ton of food is eaten each year after childhood.

From this food the digestive organs must extract and absorb proteins, fats, carbohydrates, vitamins, minerals, and convert them into blood, bone, energy—a truly amazing process.

Such a vital system must be kept in perfect working order. Even the causes of slight disturbances should be discovered immediately so that serious disorders do not develop. A periodic check-up is one of the surest ways to keep the organs functioning properly.

Authorities agree that many causes of gastro-intestinal disorders can be recognized in the radiograph. So, when your physician needs decisive facts in his periodic check-up, he will suggest an x-ray examination. Equipped with visible evidence of actual conditions, his diagnosis can be positive.

A periodic physical examination once a year is vital to your well-being. Go to your physician regularly for a complete health audit.

HAVE AN ANNUAL HEALTH AND X-RAY EXAMINATION

An interesting new booklet "X-rays and Health" describes the important part x-rays can play in maintaining health. It will be sent free on request. Merely mail the coupon.

EASTMAN KODAK COMPANY, *Medical Division,*
355 State Street, Rochester, N. Y.

Gentlemen: Please send me the free booklet—"X-rays and Health."

Name_____

No. & St._____ City & State_____

THIS TAB
protects
THE PURITY OF BABY'S FOOD

WITH this new Hygeia Nipple, your fingers need never touch the sterilized inside surface of the nipple. Just grasp the tab and slip the nipple on or off in a moment!

This new nipple is just one of the sanitary features of the famous Hygeia Nurser . . . the Nurser endorsed by nurses and physicians. Used in more than 2000 hospitals. The wide-mouthed bottle is easily cleaned, easily sterilized, easily filled. The Hygeia Nipple is shaped like mother's breast.

GUARANTEE: Each Hygeia Cell is guaranteed to withstand all temperature changes encountered in its regular use. Any defective Cell will be promptly replaced.

Hygeia Nursing Bottle Co.
Buffalo, N.Y.

Hygeia
THE SAFE NURSING BOTTLE

FREQUENT PREGNANCIES LOWER RESISTANCE TO DISEASE

Not only does the mother who gives birth to children in rapid succession become less resistant to tuberculosis, but the children suffer the same effect. Dr. S. Adolphus Knopf discusses these two possibilities of infection in a short radio address. He comments:

"The tuberculosis germ is everywhere, and only when we are strong and healthy does it fail to do us any harm, but too frequently repeated pregnancies, even in strong women will undermine the system and make it less resistant. To prevent tuberculosis, every married woman should have an annual health examination and at least an interval of two years to recover from one pregnancy before getting into that condition again.

"When there are already too many children and the husband's earnings are small, the result is underfeeding, overcrowding and often insufficient clothing in cold weather. These three causes undermine the system, so that the germ of tuberculosis will get easy hold. Large families are often compelled to have their children help to add to the family budget. If there is anything which predisposes young people between 15 and 20 to tuberculosis, it is when their growth and general development have been stunted by child labor."

Not only may tuberculosis harm the woman who has too frequent pregnancies, but other ailments such as kidney, heart, nervous and mental diseases may cause the untimely death of mothers whose lives could have been preserved.

DURING SUMMER, CHECK PRESCHOOL CHILD'S HEALTH

"The Summer Round-Up, a campaign to send to the entering grade of school or kindergarten a class of children as free as possible from remediable physical and mental defects, will be necessary until parents become fully advised of their responsibilities for the health of their children," says Edith S. Countryman, chairman of Summer Round-Up activities for the Iowa state department of health.

The round-up presents not only an educational phase but also an economic aspect which is sound because it prevents waste of educational effort with its attendant cost. Many children are grade repeaters because of some physical defect, the correction of which might prevent this waste of time.

The A.P.-UPLIFT
U. S. Pat. 1,702,922
—Invented by Mme. Poix to create the stylish upward contour; to relieve pain and remove cause of many bust troubles; also for pre-natal and nursing periods.
Sizes 30 to 44
Pink Repp.....$1.00
Pink Tussah Silk... 1.50
Pink Mesh or Jersey 2.00
If not at dealers, order direct giving exact bust measure next to skin. Booklet free on request.
G. M. POIX, Inc.
103 Madison Ave.
New York, N. Y.

F. & R.'s GENUINE GLUTEN FLOUR
Guaranteed to comply in all respects to standard requirements of the U. S. Department of Agriculture.
Manufactured by
THE FARWELL & RHINES CO.
Watertown, N.Y., U.S.A.

F. & R.'s GENUINE WHOLE WHEAT FLOUR
100%
Nothing added—Nothing taken away
Manufactured by
THE FARWELL & RHINES CO.
Watertown, N.Y., U.S.A.

F. & R.'s GENUINE GRAHAM FLOUR
A real old-fashioned, honest-to-goodness Graham Flour; exactly like that made by Dr. Graham
Manufactured by
THE FARWELL & RHINES CO.
Watertown, N.Y., U.S.A.

A Support for CHILDREN

Combined shoulder, abdomen and back control, regulated by the Camp Patented Adjustment are provided by this Camp Support (No. 131). In size it is proportioned to age and can be worn with maximum comfort. Endorsed by leading physicians.

Write for special information.

CAMP
Physiological Supports
S. H. CAMP AND COMPANY
Manufacturers, JACKSON, MICHIGAN
Chicago
1056 Merchandise Mart
New York
330 Fifth Avenue

IMPORTANT to Mothers and Babies. FREE Trial Offer
Protected by U.S. and foreign patents.
For many years the Anti-Colic 3-hole nipple has been the choice of physicians, nurses and millions of mothers. Now the new Anti-Colic with Sani-Tab marks another great improvement in the hygiene of infant feeding. Much more easily applied to bottle, too. Let us send one absolutely free, for trial. Write to Davol Rubber Company, Dept. H7, Providence, R. I.

CHILDREN CONVALESCE IN FOSTER HOMES OF NEW YORK

A new way to bring convalescent children back to health and strength when for any reason they should not be returned to their own homes is to place the little patients in carefully selected foster homes. Although this seems to be quite a new idea, yet this plan has been in operation for thirty years in New York under the sponsorship of the Speedwell Society. Mrs. May F. Heroy, chairman, maintains that the plan is not only cheaper but more successful than institutional care.

The children are placed in foster homes usually in the country. The foster mother is paid from $5 to $7 a week by the organization. In addition, a quart of milk is supplied daily, and a nurse who is a member of the staff visits the home every day to see that everything is progressing well, while a part-time physician is constantly on call. The average daily cost for each child was $1.61. This contrasts sharply with institutional care, averaging $2.25 a day.

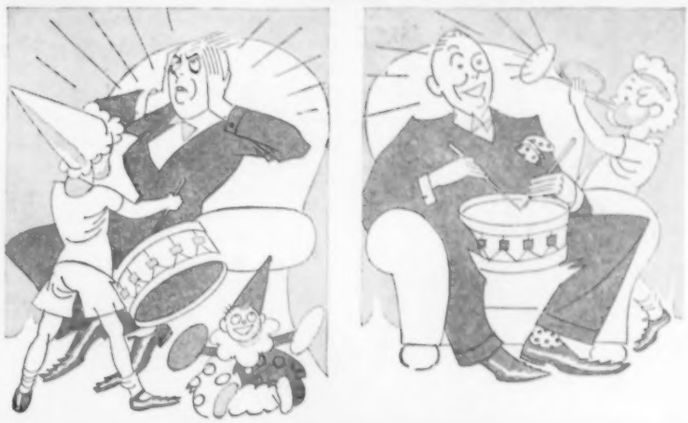
"Placing a child directly from a hospital has always been a serious problem," said Mrs. Heroy. "When he is well enough to leave, provided he could get proper care at home, often something has happened to make it undesirable for the child to go home. In these cases, which occur frequently, the little patient must remain in the hospital until fully well, which means little opportunity for play, no companionship with other children and a retarded recovery. The Speedwell plan solves this problem."

IN EVERY FIFTY LIVE BIRTHS TWINS ARE BORN

A study in twins in the state of Maryland reveals that in every fifty live births in Maryland last year, there was an average of one set of twins. Not that Maryland is peculiar in this respect, for the state record corresponds closely to that for the country as a whole. The figures published by the United States Bureau of the Census for 1928 and those for Maryland for last year indicate that one set of living twins was born to each one hundred mothers, the department of health of Maryland maintains.

Half knowledge dreads nothing but whole knowledge . . . The difference between green and seasoned knowledge is very great.
—*Dr. Oliver Wendell Holmes.*

WORN OUT? GET A NEW GRIP ON YOURSELF!



TAKE THE TWO-A-DAY WAY

LET the two-a-day way help you turn pepless days into energetic ones—turn restless nights into restful ones. Drink Borden's Richer Malted Milk cold at the fountain during the day to build your energy. Drink it warm at bedtime to settle your nerves and promote sleep.

How can Borden's give you pep and calm your nerves? Here's the answer . . . Tests conducted by a great university prove that Borden's is rich in vitamins A, B and G—rich in the identical vitamins and other food elements that so definitely promote energy and sound nerves.

Drink this richer, more delicious malted milk at the fountain during the day. Buy the Home Package, too. At bedtime, drink Borden's warm, made with milk, as an aid to sleep. Try the two-a-day way for two weeks—see how much better you feel. Mail the coupon below with 10c for liberal trial package and valuable booklet.

Borden's Richer Malted Milk

Borden's Richer Malted Milk

GO TO THE FOUNTAIN THAT DISPLAYS THE BORDEN DIAMOND

BORDEN'S 1857 ASSOCIATED COMPANIES

THE BORDEN COMPANY,
Dept. 19-C,
350 Madison Ave., New York.

Enclosed is 10c (stamps or coin) for which please send me 3-serving sample of Borden's Malted Milk and booklet.

Name_____

Address_____

City_____ State_____

"Are YOU Afraid, Too?"

"If you are over 40, you think about it. You worry about it at times. Now and then, in the middle of the night, you wake up and wonder—and a cold panic seizes you. You are in the grip of a secret, primitive, unreasoning terror.

"And what do you do about it? Absolutely nothing!

"In the morning you pooh-pooh the whole idea, and walk a whole block out of your way to avoid passing the doctor's office.

"'Never trouble trouble till trouble troubles you!' you say to yourself with forced cheerfulness. And all the while you go on secretly worrying—and doing nothing.

"Specialists agree that no disease of civilized existence is approached by intelligent men and women with such lamentable stupidity as cancer.

"You take out life insurance while you are in good health; you buy umbrellas when the sun shines; you go to the dentist twice a year—ache or no ache. But when it comes to cancer, you adopt the tactics of a voodoo-worshipper."

So begins Marian Castle in the August HYGEIA—one of the most helpful articles on cancer that this magazine has ever published. The message it contains may save countless lives, as well as years of suffering and worry. Every person over 40 should read "Are You Afraid, Too?" If you are not already a subscriber, begin your subscription with this issue. This article alone is worth far more than the subscription price!

Also in the August HYGEIA

Other helpful and informative articles in this issue include "Parents, Cooperate with Your Child's Physician!" by Mrs. Louise Price Bell; "Magic by the Hour," a story on the hourly nursing service, by Dorothy Deming, R.N.; "Mishaps on the Tourist Trail," by Curtis Billings, Public Safety Division of the National Safety Council; "This Business of Blood Pressure," by Dr. Robert A. Kilduffe, and "The Annual Roundup," showing the advantages of an annual health examination for children, by Dr. Rachel Ash.

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KINDERGARTENERS STUDY FAMILY LIFE OF RABBITS

At the Bennett School in Chicago an experiment in biology was carried on in the kindergarten. Two rabbits were brought there by an eighth grade student. As soon as the children saw the rabbits they asked if they would have young ones and when they were told of the possibility they proceeded to plan for their care. They constructed a little home for the pair and fed them in real rabbit style with carrots and greens.

When one morning it was observed that Snicky, the female rabbit, had made a nest of excelsior, hay, her own fur, and sawdust, a vote was taken to determine whether Snowball, the male rabbit, should be allowed to remain. It was decided that he might disturb the young too much and so he was sent away. One Monday morning Snicky went far from her nest to receive her food, and the children then knew that the baby rabbits had been born. It was voted that only one reporter, selected daily, should view the rabbits.

The kindergarteners kept a diary of the life history of the little rabbit family. The first-hand experience with the processes of nature developed in the children a respect for life, a power of accurate observation and understanding of animals and a responsibility in the care of animals. These children's lives were enriched from the mental and the social point of view as a result of this experience, Elsa Wolf writes in the *Chicago Schools Journal.*

PERSONALITY STUDY IS NEEDED IN TRAINING TEACHERS

The problems of those teachers who work in teacher training are as numerous as traits of human nature and personality. Since not all girls are suited to teaching, only those who show a liking for the work and pass examinations may enter the field.

But in this group are the highly intellectual, the emotionally high-strung and the borderline cases in intelligence. There are the meek and hesitant, the eager and the talented. There are varied combinations of these characteristics, and many applicants for the teaching profession present serious problems. Problem teachers are outnumbered by the well balanced teachers but nearly all need close attention. *School and Home* offers case studies of some of these girls who decided to teach.

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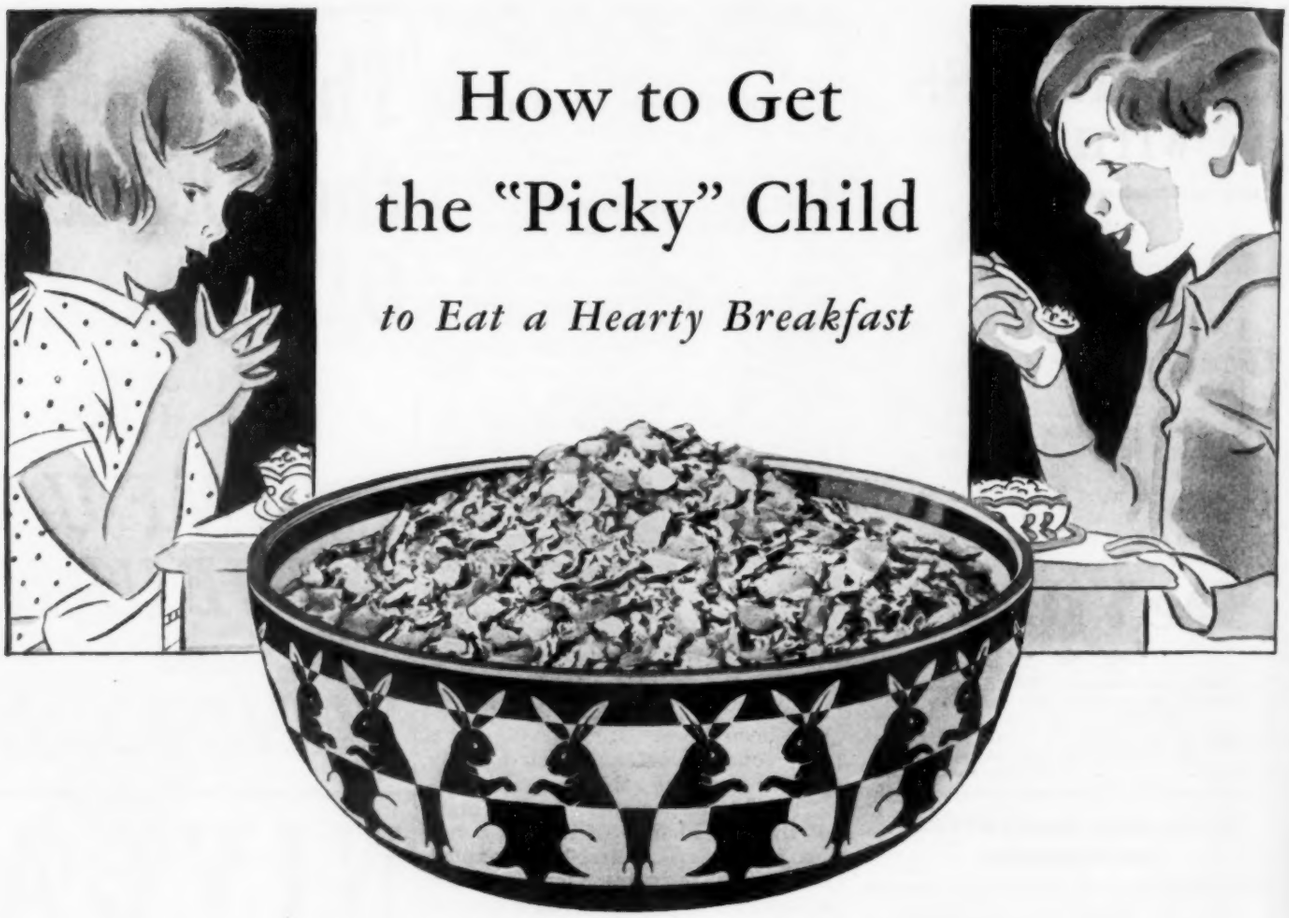

How to Get the "Picky" Child

to Eat a Hearty Breakfast

Here's Whole Wheat in a Form Children Adore!

Delicious, Crisp-toasted Whole Wheat Flakes They Revel In Like a Party Dish

Accepted by the Committee on Foods of the American Medical Association

If children are physically sound, but are "never hungry" or "picky"—then you are urged to try Wheaties. The new form of whole wheat with a magic something about it that makes children go for it.

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In the manufacture of Wheaties, none of the bran (with its valuable phosphorus and iron), nor of the germ (that part of the wheat berry where Nature has stored up vitamins A, B, E and G) has been removed.

There must be a sound reason why wheat has always been the basic cereal food of most Europeans and Americans. With nearly twice the protein content and more minerals, it has a distinct advantage over such grains as corn and rice.

Accepted by the Committee on Foods of the American Medical Association

Here is another point about Wheaties. They have been accepted by the Committee on Foods of American Medical Association. That fact, in itself, is the best possible assurance in the world that you can have concerning the merits of Wheaties as a food. And—in respect to their quality and the advertising claims made for them.

Samples Will Be Sent

If you believe in Whole Wheat for children—send for a generous supply of sample packages of Wheaties today. No obligation, of course. You are urged to try them yourself first. Then, if you think it advisable, give the mother of the "never hungry" child a package to try. The results may prove highly satisfactory. *1121A*

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